

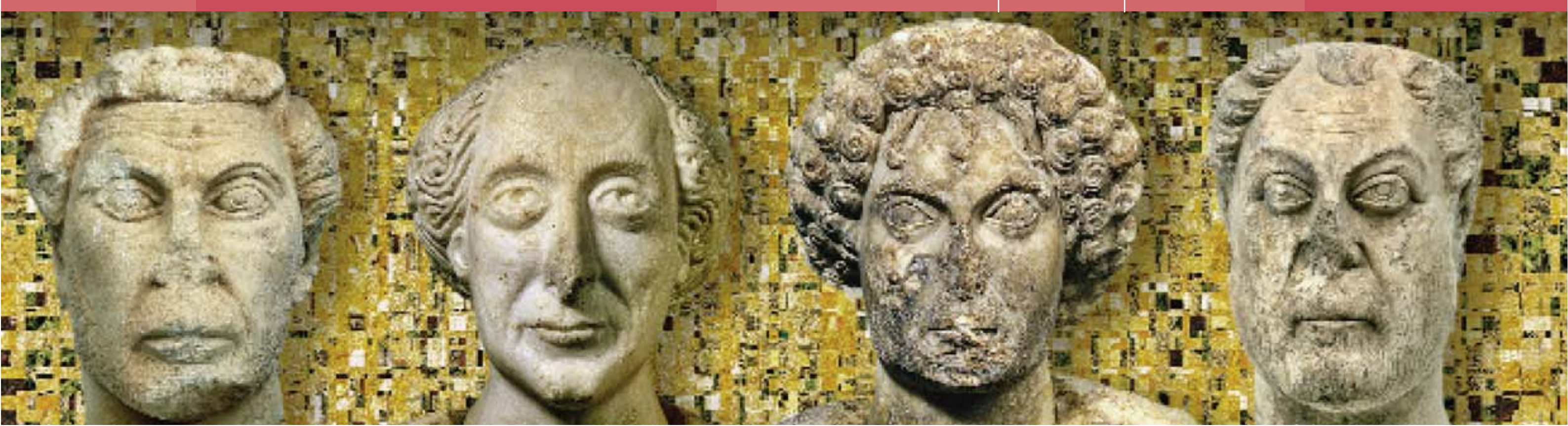
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Byzanz – das Römerreich im Mittelalter

Teil 1 Welt der Ideen, Welt der Dinge

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EARLY CHRISTIAN AND BYZANTINE GLASS VESSELS: FORMS AND USES

In order to examine a phenomenon such as the use of a material for the production of vessels within a society, it is first necessary to define the society itself, namely the society as the result of various common characteristics that distinguish the way in which its inhabitants think and live, and also to identify the space that it occupies. The next stage is to determine the needs met by the production and use of this material, in this case, glass. When examining the production and use of glass in Byzantium, it becomes apparent that the Empire did not really function as a socially and economically cohesive system and that this only really appeared as such in modern historiography that wished to organise the eleven centuries of history of a geographical region that, in certain periods, spanned half of the Mediterranean basin[1].

Societies of the coastal urban centres of the Aegean, Adriatic and Black Sea, and those of the relatively large settlements that thrived along the main trade routes, were often so different from the societies of the small hamlets of the Anatolian plateau, or of the Balkan inland, that it is impossible to make any generalisations, at least not with regard to the character and the number of users and uses of glass.

In addition to the difficulties arising from the diversity of the area under consideration, i.e. the Byzantine world, there are various other factors that hinder the ability to draw accurate conclusions:

Glass was recycled throughout the early Christian and Byzantine period[2], which means that all evidence of the true extent of the use of glass, both in terms of quantity and diversity of forms, has been melted in glassblowers' kilns. Also, the most easily recognisable parts of vessels and therefore the more didactic ones, such as rims, handles and bases, are the ones that weigh the most and are thus the ones collected with the greatest consistency, leaving mainly smaller, non-characteristic fragments on site.

Consequently, archaeological finds do not reflect a true picture of everyday life of the period or area under consideration, rather they reflect the consistency of recycling. The only exceptions to this are undisturbed strata of abruptly destroyed and/or abandoned sites, which represent only a fraction of the extant material. Although grave finds do offer an undisturbed picture of the past, they only reflect the burial habits of the society and not necessarily its everyday life.

We must not forget that the majority of excavations conducted are salvage excavations and therefore segmental ones. This is another factor that further distorts our obscure picture of the past, created by the segmental and circumstantial character of the excavated finds. Furthermore, published glass objects were mainly found in graves, which means that they only represent the repertoire of the vessels and objects used as grave goods or in burial and memorial rituals.

Written sources, which only very seldom shed light on aspects of material culture, are another unhelpful factor. Writers were often completely indifferent to details of everyday life, taking for granted the reader's knowledge of such issues that were not, in any case, the focal point of the writings[3].

1 For a general discussion on Byzantine glass see: Philippe, Le monde Byzantin. – Shorter presentations on the same topic were given by: Harden, Post-Roman. – Henderson / Mango, Glass at Constantinople. – François / Spieser, Pottery and Glass.

2 It appears that recycling of glass shards was widely introduced already during the Flavian period (69-96), along with the spread of free blowing technique: Trowbridge, Philological Studies 106-107. – Stern, Roman Glassblowing 451.

3 On the evidence about Glass in Greek and Latin see: Trowbridge, Philological Studies. – On Byzantine glass in Greek Texts from 8th-15th century see: Talbot, Evidence. – And for research throughout the Byzantine period see: Schönauer, Glas und Gläser.



Fig. 1 Tableware (flasks, bottles and jugs), 4th-6th century. Museum of Byzantine Culture, Thessaloniki.

Finally, the reluctance of pictorial arts to incorporate elements of everyday life into religious representations is equally unhelpful; these representations are almost exclusively the only ones still surviving[4].

Despite the disheartening starting point, the existing archaeological material, as well as the pictorial and textual material, will be presented in the following. Due to their fragmentary nature, the results should be perceived more as snapshots than as a clear and definitive representation of everyday life, such as was possible with the results of other areas of research, for example, pottery.

EARLY CHRISTIAN/EARLY BYZANTINE PERIOD (4TH-7TH CENTURY)

Glass remained an extremely expensive material for many centuries after its invention in the late 3rd millennium BC and, for a long time, it was only used as a semiprecious stone[5] and later for the production of special vessels that were found only in palaces and temples[6]. From the classical Greek period onwards, small glass unguentaria became more widely available, but they were still the exclusive preserve of the highest social strata[7]. The invention of glass blowing, a technological revolution that took place around the early 1st century BC somewhere near the Levantine coast, resulted in the greater production of glass vessels and by the mid 1st century AD, to a gradual fall in prices, which meant that glass vessels were available to a wider social strata of the Eastern Mediterranean region[8]. Consequently, glass became much less significant in the system for evaluating materials. By the 1st century, possessing glass vessels, usually tableware, or even plain transportation vessels, was commonplace, at least among the wealthier social strata.

4 On the use of artistic evidence in the study of Byzantine glass and the limitations that it presents, see: Parani, Representations of Glass Objects 150-151.

5 Oppenheim / Brill / Barag / Saldern, Glass and Glassmaking in Ancient Mesopotamia passim, esp. 4-101. – Barag, Catalogue of Western Asiatic Glass 111 no. 179 pl. 20. – Stern / Schlick-Nolte, Early Glass 19-20.

6 Stern / Schlick-Nolte, Early Glass 27-37; 44-53.

7 Grose, Early Ancient Glass 110-125. – Stern / Schlick-Nolte, Early Glass 37-44.

8 Israeli, The invention 46-55. – Israeli, What did Jerusalem's 54-58. – Stern, Roman Glassblowing 441-484, esp. 446-447.



fig. 2 Bowls, 4th-5th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

By the 4th century, there were dozens of different forms of glass vessels covering all kinds of needs, both secular and religious:

1) Secular, such as transporting and preserving liquids, drinking and presenting food, preserving unguents, cosmetic and medical substances, as well as lighting public and private buildings.
2) Religious, such as transporting holy water or other sanctified substances, preparing and distributing Holy Communion, or use during burials and memorials.

Transportation

Large vessels, such as the two late 4th century amphorae, exceeding 0.5m in height[9], designed for the transportation of goods are extremely rare archaeological finds, although they must have been relatively common at the time since they are even mentioned in historical sources, for example, in the story of Velissarius' wife, who was able to maintain fresh water supplies for her husband's ship during the Sicilian campaign by preserving it in glass amphorae placed in a sand bed in the hold[10].

Tableware

During this period, glassware was very widely used on the tables of upper and middle class people since it was relatively cheap and easy to obtain (**fig. 1**).

[9] Bitrakova, Rimski grob 95 photo 2.

[10] Procopius, Hist. De Bellis 3.13.24.2-6.



Fig. 3 Stemmed beaker, 5th-6th century. Princeton University Art Museum, acc. no. 1946-246.

Vessels for holding and serving liquids, generally wine, usually holding around 1 or 2 librae, without handles, or with one or two handles, were produced in many forms (spherical, pear-shaped, spindle-shaped, cylindrical, prismatic, to name just a few)[11]. They often featured incised or engraved decoration that was either simple, geometrical or more elaborate, with figurative motifs. Many examples are covered with dip mould-blown ribbing, usually oblique. Quite often they are decorated around their lip or neck with an applied thread or coil, occasionally of a different colour to the body, which is wound once or several times in a spiral around the neck. Also, a few examples bear applied decorative medallions[12].

Drinking vessels are usually simple, almost hemispherical bowls[13], often bearing incised or applied relief decoration (**fig. 2**). Stemmed goblets[14], occasionally with applied decoration, represent the most wide-spread form of drinking vessels (**fig. 3**). Also, there are often tall, truncated conical beakers[15], occasionally with incised or applied decoration (**fig. 4**). The latter were also used as lighting devices, while one had a very peculiar use, that of poteromanteia, namely beaker-divination, which is preserved by Damaskios, the last scholarch of the Academy of Athens (460?-after 538) who describes a seeress, who filled a glass beaker with fresh water and, by simply gazing into it, saw visions of the future and made relevant predictions[16].

[11] Harden, Karanis 231-251 clas. XI. – Isings, Roman Glass, forms 101-104; 120-126. – Dussart, Le verre, forms BX. 2; BX 31-32; BX.5; BXII; BXIV. – Antonaras, Thessaloniki, forms 80-97.

[12] Stern, Roman, Byzantine and early Medieval Glass 260-275.

[13] Isings, Roman Glass, form 96; 113-114; 131-133.

[14] Isings, Roman Glass, form 111.

[15] Isings, Roman Glass 129; 137-138 forms 106; 109c.

[16] Damascius, Vita Isidori 191.1-5 PG 103 col 1289.



Fig. 4 Beaker, 4th-5th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.



Fig. 5 Oval dish, 5th-6th century.

Dishes and trays, used for presenting and consuming food in smaller or larger quantities, appear less often. However, several types of these, namely plain or footed, circular or ovoid, appear among archaeological finds[17] (**fig. 5**).

[17] Harden, Karanis 47-62 class I.A.-B. – Isings, Roman Glass 116-117; 144-145; 148 forms 97; 116; 118. – Vessberg, Roman Glass in Cyprus 112-114 pl. I (Shallow Bowls of type B.II). – Saldern, Sardis 60 no. 374.



Fig. 7 Stemmed lamps, 5th-6th century from Larissa (reg. Thessalien, GR).



Fig. 6 Lamp and *polyaggistron*, 5th century from Colchida (Kilkis, reg. Macedonia, GR). Museum of Byzantine Culture, Thessaloniki.

Lamps

In the Early Christian period, glass was used for the first time on a large scale for the production of lighting devices. These were often drinking vessels or vessels developed from them with the addition of small handles around their rim so that they could be hung from metal clasps or hooks, i.e. *polyagistra* (fig. 6). Plain deep bowls were used as liners inside openwork metal lamps, i.e. κανίσκια[18]. There are also known forms that

[18] Stern, Kaniskia 98-102. The term is also present in later Byzantine periods, obviously referring to similar creations see: Bouras, Lighting devices passim.





Fig. 8 Unguentaria, 4th-6th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

Fig. 9 Spindle-shaped unguentarium, 4th-5th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

were used exclusively as lamps, i.e. calyx-shaped[19] or stemmed ones, οὐρίαχοι[20] (**fig. 7**). They are found in quite a wide variety of shapes, meeting different lighting needs and representing different forms of lighting devices, either free-standing or suspended, used individually or in groups and fixed in metal *polycandela*. However used, they always presented a solution relating to specific spaces, rituals and social and economic status and they never presented a threat to the predominance of their clay counterparts[21].

Unguentaria

Unguents and cosmetics were, almost exclusively, transported and preserved in glass vessels. Unlike their exquisite early-Roman forerunners, these were usually simple, very widespread vessels in the appropriate size[22] (**fig. 8**), or sometimes also larger ones, such as the spindle-shaped unguentaria[23] (**fig. 9**) known all

19 Antonaras, Thessaloniki, form 41 (calyx-shaped lamp with three handles).
20 Silentiarius, Descriptio l. 825.
21 Uboldi, Diffusione delle lampade vitree 93-145. – Antonaras, Glass Lamps.
22 Isings, Roman Glass (miniature versions of forms 101 and 103). – Dussart, Le verre, forms BX. 3.11; BXIII. – Stern, Roman, Byzantine and early Medieval Glass 272-273. – Antonaras, Thessaloniki, forms 133-147.
23 Isings, Roman Glass 126 form 105.



Fig. 10 »Kohl-tube« unguentarium, 5th century. Corning Museum of Glass.



Fig. 11 Janiform unguentaria, 4th-5th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

over the Mediterranean during the 4th-5th century, as well as other more elaborate ones, such as the multi-compartment kohl tubes[24] (**fig. 10**) and the jani-form/double-faced mould-blown vessels[25] (**fig. 11**).

Medical and alchemical implements and vessels

There is also evidence of the consistent use of glass in medicine. Vessels for preserving medicaments, bleeding cups, pestles and mortars are often mentioned in written sources but, unfortunately, there are no firmly dated archaeological finds from this period. Written sources are very important for preserving a wealth of information on the forms and uses of glass vessels in medical practice.

Very often, physicians used glass vessels to store various raw materials, such as sesame oil[26], and also for their own preparations, such as balsams (ὀποβάλσαμον)[27] and oculist's ointments[28]. The exact forms of these vessels remain unknown, apart from a few cases where the name of the vessel is descriptive of its shape, e.g. κύβος (cube)[29], σφαιρίον (globe)[30], και τροῦλλος (dome)[31]. Also, in some cases, vessels were used as a measure for liquids and it is therefore possible to estimate their size[32]. Furthermore, just like today, some substances were crushed or pulverised in glass mortars (ἴγδης[33], θυεία[34]) while other vessels

24 Barag, Glass Vessels 2, pl. 38-39 types 11; 12. – Stern, Roman, Byzantine and early Medieval Glass 317-320 nos 179-182.
25 Stern, Roman Mold-blown 201-247, esp. 210-215.
26 Paulus Aegineta, Epitomae medicae libri septem 7.20.11.1-5.
27 Paulus Aegineta, Epitomae medicae libri septem 7.20.33. – See: Apostolides, Ερμηνευτικό λεξικό, s.v. ὀποβάλσαμον.
28 Hippiatrica Berolinensia 11.38.1-3.
29 Zosimos 12. Quoting: Berthelot / Ruelle, Collection II 183; l 13.
30 Fragmenta alchemica. Quoting: Berthelot / Ruelle, Collection II 353; l 20.
31 Zosimos 12. Quoting: Berthelot / Ruelle, Collection I 164; l 12.
32 Apostolides, Ερμηνευτικό λεξικό, s.v. ὀξύβαφον (which is equal to a τρυβλίον, i.e. 0,068 of a libra). Or κοτύλη equal to 0,2736 of a libra and κύαθος equal to 0,0456 of a libra.
33 Fragmenta alchemica. Quoting: Berthelot / Ruelle, Collection II 350; l 2; 16.
34 Fragmenta alchemica. Quoting: Berthelot / Ruelle, Collection II 359; l 24.

with a suitable shape and thickness were also used occasionally for this purpose, e.g a thick πατέλλιο[35]. Glass pestles (τριβίδια)[36] were occasionally used to crush substances. Soranus, who uses the shape and size of the cracks in the glass vessels in his description of bone fractures, demonstrates the frequency with which glass vessels were used by physicians, and also how often these were used when cracked. Ephesian Soranus studied medicine in Alexandria and practiced his profession in Rome during the reign of Trajan and Hadrian. His descriptions therefore reflect the standards of major urban centres[37]. Finally, even glass shards were used in medicine: Soranus specifically mentions that, instead of using proper steel tools, midwives used glass and cane to cut the umbilical chord of newborn babies[38]. Also, Apsyrtus proposes glass-cutting instead of cauterisation for healing warts[39].

Yet another specialised use of glass was the production of glass alembics[40]. The term used by Zosimus in the mid 3rd century is extremely enlightening in terms of shape. He referred to »ἀγγεῖον ὑελοῦν ἀρσενόθηλυ«[41] obviously referring to the shape of the two parts, but also to the way in which they fit together. Another type of medical instrument made of glass in the Roman period was the bleeding cup (συκία)[42]. According to information repeated by Paulus Aegineta, glass bleeding cups were handy because physicians could check the volume of blood (s)he was letting[43].

Religious uses

Chalices and patens

There are a few surviving examples of massive stemmed goblets bearing engraved Christian decoration that are thought to have been used as chalices[44] (**fig. 12**). The use of glass chalices is recorded in written sources where, in some cases, they are referred to as cheap substitutes for metal prototypes[45] while, in other cases, there is no indication whatsoever that an economic aspect was involved in their selection[46]. Glass patens are also recorded in written sources, at least during the early 3rd century[47].

Ampoullae/eulogiae

Special religious use is also ascribed to ampoullae (**fig. 13**) and εὐλογίες (**fig. 14**), small lentoid[48] and larger prismatic vials[49], probably used for transporting myrrh or holy water from the large Syropalestinian pilgrim-

35 Salmanas 3. Quoting: Berthelot / Ruelle, Collection II 365; I 5; 24.
36 Salmanas 3. Quoting: Berthelot / Ruelle, Collection II 365; I 25.
37 Soranus, De signis fracturarum 2.1.1-6.
38 Soranus, Gynaeciorum libri IV 2.11.1.3-.2.4.
39 Hippiatrica Berolinensia 82.1.2-5.
40 Aetius Amidenus Med. latricorum liber VII 50.64-66. – Also in: Mertens, Les alchemistes grecs 11-13.
41 »περί τοῦ θείου ὕδατος«. In: Mertens, Les alchemistes grecs 30-33.
42 Oribasius, Collectiones medicae 7.16.13.1-15.1.
43 Paulus Aegineta, Epitomae medicae libri septem 6.41.2.3-5
44 Philippe, Le monde Byzantin 47-52. – Whitehouse, Roman Glass 107 no. 160.
45 Harden, Karanis 44.
46 Trowbridge, Philological Studies 157 fn. 45. – Whitehouse, Roman Glass 107 no. 160 (with references to the sources).
47 In Liber Pontificalis, is noted that pope Zephyrinus used »patenas vitreas« (glass patens). Quoting: Davis, The Book of Pontiffs 7.
48 Roffia, Il Tesoro del Duomo di Monza 446-449 fig. 3. – Stiaffini, Ευλογία 79-81. – For vessels of the same forms, used in Islamic societies for the transportation and storage of medicaments and dated between late 8th and early 11th century see: Lester, Glass Bottles and vials from Tiberias 161-162 fig. 4. – It is only logical to assume that some of the current forms, convenient in terms of size or shape (e.g. lentoid ones), were established as religious ampullae. It is also quite probable that the same vessels were also used for medicaments. It seems that medical substances, with regard to their curative character, were not so firmly discerned from holy water, myrrh or any other substances (soil, lamp oil, etc) which received the Grace of a holy person or object and protective powers against evil or disease. On the supernaturalistic side of the Byzantine medicine see: Prioresci, A History 163-165. – Nutton, Galen to Alexander 7-9. – Vikan, Art, Medicine and Magic 65-86.
49 Barag, Glass Pilgrim Vessels 1, passim. – Barag, Glass Pilgrim Vessels 2, passim.



Fig. 12 Chalice, 6th-7th century. Corning Museum of Glass.



Fig. 13 Ampoulla, Early Christian period from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

age centres to the pilgrims' homelands[50]. The decoration of the prismatic examples features both Christianity and Judaism and it seems that they were produced for followers of both religions. Finally, a new liturgical use has been proposed for them, namely storing and pouring wine for the preparation of the Eucharist[51].

Use in burial customs

Glass vessels of all forms and types, namely jugs, bottles, drinking vessels and those for presenting food, unguentaria and lamps are found in or around graves[52]. In the case of Christian burials, they do not represent grave goods as these were strictly forbidden by the Church, rather they were used in the burial ritual and were then left in the graves since they were then no longer deemed appropriate for further use. Furthermore, tableware found scattered around the graves is linked to memorials and banquets organised on special memorial days[53].

General remarks

During the Early Christian period (4th-7th century), since commerce flourished in the Mediterranean world with no real boundaries, large Levantine glass workshops distributed mainly raw material and also some

50 On ampoullae see: Wessel, Ampullen 137-142. – Grabar, Les ampoules passim. – Wessel, Eulogia 427-433.
51 Woods, Some Dubious Stylites 49.
52 Laskaris, Monuments funéraires 325-326 and passim.
53 Antonaras, Glassware in Late Antique Thessaloniki (with further bibliography).



Fig. 14 Eulogia vessel, 6th-7th century. Corning Museum of Glass.



Fig. 15 Glass kiln, Louloudies (reg. Central Macedonia, GR).

finished products to centres situated considerable distances away[54]. At the same time, there were many local workshops[55] (**fig. 15**) that both imported raw glass and recycled broken vessels. Similarly to pottery workshops, they met local needs for everyday utilitarian objects, mostly plain but, occasionally, with simple decoration. The vast majority were plain, free blown, naturally coloured, greenish or olive green vessels without any artistic pretensions. A few were optic mould-blown, bearing plastic decoration, usually simple geometrical and, occasionally, more elaborate designs[56]. Some had glass threads wound around them, others had applied coloured decoration around their body, engraved bands of varying widths or pinched extrusions.

A broader distribution to remote areas was, most probably, restricted to luxurious vessels that required highly specialised craftsmanship for their production and decoration, such as the *diatreta*[57] and *fondi d'oro*[58] (**fig. 16-17**). Another special group is represented by εὐλογίες, small lentoid[59] and larger prismatic vials[60], designed for the transportation of myrrh or holy water from the large Syropalestinian pilgrimage centres to the pilgrims' homelands, or to cover liturgical needs.

To conclude, it should be noted that glass vessels catered for just a small proportion of the uses and needs met by clay vessels. Glass was mainly the preserve of the wealthier social strata that used glass vessels

54 Gorin-Rosen, Ancient Glass Industry 49-64. – Freestone / Gorin-Rosen / Hughes, Primary Glass 65-84. – Dussart, Quelques indices 91-96. – Nenna / Picon / Vichy, Ateliers en Égypte 97-112. – Aerts et al., Qumrân 113-122. – Foy / Nenna, Tout feu 35-40 (on primary workshops) and 99-120 (on trade). – Tal / Jackson-Tal / Freestone, New Evidence 54-61 (on Levantine primary workshops).

55 Sternini, La fenice di sabbia 137-200 (exhaustive catalogue of imperial and early-Christian secondary workshops).

56 For large, published groups from occupation areas see: Harden, Karanis passim. – Saldern, Sardis 35-97. – Keller, Petra passim. – For general remarks on the material form this period see: Harden, Post-Roman 79-81.

57 Harden, Group G and Group H 185-186; 239-249.

58 Morey, Gold-Glass Collection of the Vatican Library passim. – Painter, Groups J and K 262-268; 276-286.

59 Roffia, Il Tesoro del Duomo di Monza 446-449 fig. 3.

60 Barag, Glass Pilgrim Vessels 1, passim. – Barag, Glass Pilgrim Vessels 2, passim.



Fig. 16 Cage cup, approx. 300 AD. Corning Museum of Glass.



Fig. 17 Gold glass base, 4th century. Corning Museum of Glass.

selctively instead of the ordinary clay and wooden vessels. By applying our scant knowledge of the cost of glass at the beginning of the 4th century, by means of Diocletian's edict of 301, we can calculate that a glass bottle would have cost 10 times the price of a similar ceramic vessel, approx. 5-10 denarii, equal to the price of a worker's meal, or a fifth to a third of his daily wages[61]. Vessels from Thessaloniki were used for the calculations, where an average bottle or jug weighs approx. 80-150 g. So, if a pound (327.45 g) costs 20 or 30 denarii, depending on the quality of glass, a vessel of that kind would cost 5-10 denarii[62]. It is interesting to add that glass vessels, or at least the plain ones, were sold by the pound, just like glass tesserae and window panes, the workmanship of the glass-worker offering no added value to the product. The way in which the chief physician of Antinoe, Fl. Phoibammon, expresses his last will in 570 AD is enlightening with regard to the low price of glass vessels. He declares that he bequeaths to his sons all his possessions: »from luxurious articles to common wood, clay and glass ones«[63].

Also, glass was clearly favoured for some uses, for example, for unguentaria and medicine receptacles. However, it was only occasionally used for storage vessels or as vessels for long-distance trade. Finally, glass, clay and metal vessels were all used together for tableware in banquets, or were interchanged depending on the social demands of the specific occasion of use (glass or metal for socially more demanding occasions, clay and wood for every day life).

[61] Edictum Diocletiani. – Barag, Recent Important Epigraphic discoveries 113-116. – Stern, Roman Glassblowing 466.

[62] Antonaras, Thessaloniki.

[63] Koukoules, Βυζαντινών Βίος και Πολιτισμός V 146. – Maspero, Papyrus Grecs d' époque Byzantine 2, no. 67151 col. 92. – High resolution image of the folio can be seen at http://ipap.csad.ox.ac.uk/4DLink4/4DACTION/IPAPwebquery?vPub=P.Cair.Masp.&vVol=2&vNum=67151 (11.11.2008).

MIDDLE BYZANTINE (9TH-12TH CENTURY)

According to archaeological finds, the number of glass vessels decreases after the 7th century. A possible reason for this could be the Arab conquest of Syropalestine, which would have made the supply of raw glass more difficult. The most important factors are social turmoil, the demographic crisis, the decline in production and the decline in the size and character of the cities, which led to an economic recession lasting until the late 8th century[64]. Trade and commerce continued but suffered from the decline in production, the general insecurity and the breakdown of communication over large areas[65]. Although several cities continued to exist, on a smaller scale, as economic centres, all the above-mentioned factors led to a reduction in the number of people who could afford glass vessels. It seems that glass vessels were no longer produced for everyday use. However, in addition to texts referring to Byzantine buildings and monuments alone[66], other information testifying to the continuation of glass production and the presence of workshops producing at least mosaic tesserae can be found in written sources recording the export of tesserae and mosaicists abroad. There are records of the Byzantines[67] giving gold and mosaic to Caliph al-Walid I (705-715) for his mosque in Damascus. There are also records of Nikephoros Phocas, after 965, responding to a request by Caliph al-Haquim II (961-975) to send a group of mosaicists, together with large supplies of tesserae (320 quintar[68]), to decorate his mosque's mihrab in Cordoba[69].
Somewhat greater evidence survives from the 9th century onwards, although this is still very scant.
Despite the discouragingly small number of finds from Byzantine sites, glass vessels must have been present, at least for specific uses, and/or among special, wealthier parts of the population.

Gilded vessels

Gilded and/or painted vessels represent the only undoubtedly Byzantine group of glassware. They have been traced in Cyprus, Greece, Turkey, Italy, Belarus, Armenia, etc.[70] (**fig. 18**).
The exact use of these splendidly decorated vessels is unknown. Some could have been used as tableware or liturgical vessels and others as unguentaria. They are made of vividly coloured, blue, purple or milky glass. Most of the surviving examples are tall, cylindrical bottles, but there are also spherical bottles, tall conical beakers and shorter, barrel-like cups. On the strength of the quality of their decoration, they can be divided into two groups: the finer ones are possibly products from the capital, whereas the less refined ones are similar to the decoration of Cypriote pottery of the early 13th century and could be connected with this region[71].
They were used between the end of the 12th century and the first quarter of the 13th century[72]. The only striking exception is presented by the famous »St. Mark's bowl« that, on the basis of its decoration, is generally dated to the 10th-11th century[73] (**fig. 19-20**). It is interesting that they are represented in almost all sites where they are found with very few shards that, together with their wide geographical distribution,

64 Dagron, The Urban Economy 397-401.
65 Laiou, An Overview 1146-1147.
66 Cutler, Industries 557-561, esp. 559-60. – Also, for a general overview of Byzantine monuments with wall mosaics from 8th to 12th century see: Chatzidaki, Byzantine Mosaics 17-22.
67 Grabar, Early Islamic Art 53 (account #9 of Kitab al-Dhakha'ir).
68 A quintar equals ca. 180 kg: Jacoby, Raw materials 69 fn. 25.
69 Philippe, Le monde Byzantin 28. – According to 12th century al-Idrisi and later sources: Cutler, Industries 560.
70 Grabar, La verrerie d'art Byzantine 90-106. – Fragments, which are still unpublished, have also been found in two 13th century excavations in northern Greece (personal observation).
71 Whitehouse, Byzantine Gilded Glass 5.
72 Megaw, A twelfth century scent bottle 59-61. – Megaw, More gilt 88-104. – Whitehouse, Byzantine gilded glass 4-7 (with all more recent information on the subject).
73 Cutler, The Mythological Bowl 235-254. – Kalavrezou-Maxeiner, Cup of San Marco 167-174.



Fig. 18 Gilded and enamelled coloured glass bottle and beakers, 13th century.



Fig. 19 »St. Mark's cup«. St. Mark's Treasury, Venice.

is evidence of a thin but very widely distributed production. These vessels prove the accuracy of the words of monk Theophilus[74], at least as far as the decorative motifs used by Byzantines during the early 12th century are concerned, but not with regard to the techniques used for achieving the decor. The »silver stain« technique with which they are decorated appears to be a medieval invention that is completely

74 Theophilus, De Diversis Artibus II.XIII: »De vitreis scyphis, quos Graeci auro et argento decorant« II.XIV: »Item alio modo«.



Fig. 20 Cup and patens. St. Mark's Treasury, Venice.

different from the late Roman one which involved the use of golden foils. It is now believed that only liquid gilding was used. Pulverised gold mixed with water or some other liquid was applied with the help of a stylus or brush, a technique that appears to be a medieval invention of Byzantine or Islamic origin[75].

Vessels made of thick, colourless, cut glass

Thick, colourless glass vessels (goblets, plates and lamps) with, probably cut, relief decoration in the form of raised, occasionally dotted, disks or arched rectangles comprise quite a controversial group (**fig. 20-22**). They are set in silver settings dating from 10th century Constantinople, from where they were looted by Venetians during the 4th crusade. They have been kept ever since in St. Mark's treasury (Venice). Generally accepted as Byzantine products[76], other scholars believe that they originate from the Sassanian world[77]. However, whether they were made in Byzantium or further East, they offer an insight into the quality and forms of glassware owned and used by Constantinopolitan aristocracy and high-ranking clergy during the Middle Byzantine period.

75 Whitehouse, Byzantine gilded glass 5.
76 Philippe, Le monde Byzantin 130-141. – Grabar, La verrerie d'art Byzantine 89-127.
77 Saldern, The so-called Byzantine Glass 124-132.



Fig. 21 Vessels made of thick, colourless, cut glass, Middle Byzantine period.

Other, local production (plain ware)

With the exception of gilded vessels, which may present specialised production during a short, delimited time span, possibly for transporting a special substance, and the group of thick, colourless, cut glass, it is clear that other vessels were also produced in Byzantium. The gift of the 17 ὑέλια, possibly lamps, given to the king of Italy, Hugh of Arles (926-948), by the Byzantine Romanos Lekapenos (920-944)[78] indicate that a special production line of good quality objects did exist and that they were intended for the imperial milieu and other high ranking officials. Other, simpler vessels were also produced and intended for less exquisite circumstances, such as the ποτιστήριον (jug?) or the ἀμίς (urinal) which, according to C. Manassis, were made from the same glass, despite their totally different destination[79], or the glass cup

78 Grabar, La verrerie d'art Byzantine 118. – De cerimoniis aulae Byzantinae 661.

79 Manassis, Breviarium historiae 91 l. 2093.

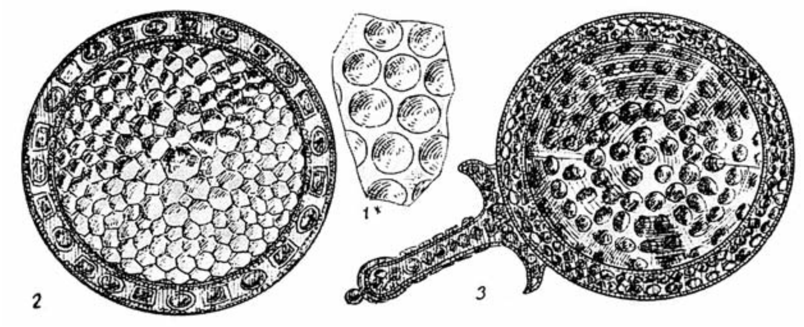


Fig. 22 Patens made of thick, colourless, cut glass, Middle Byzantine period.

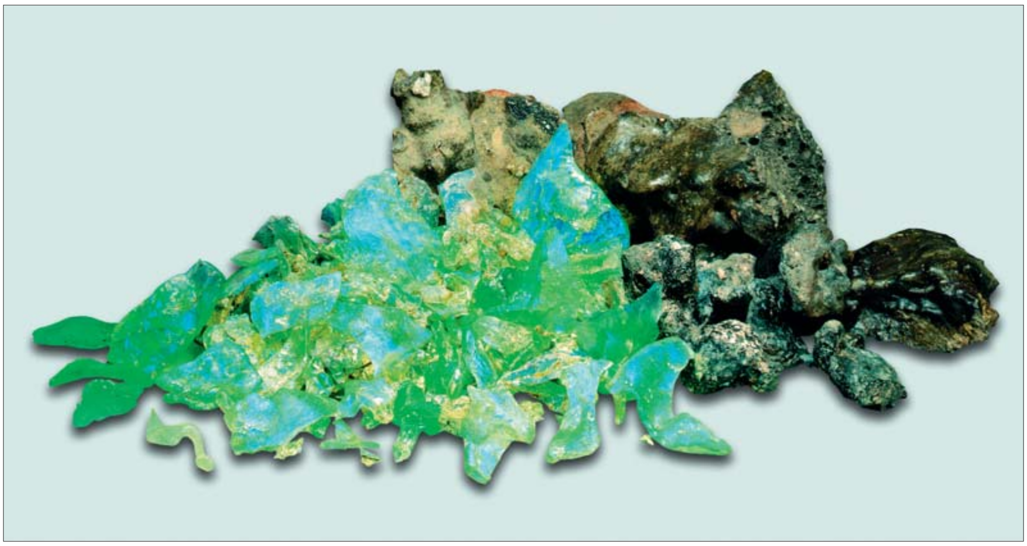


Fig. 23 Cullet and parts of a glass kiln, 9th-10th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

(σκύφος) that was used by the Emperor Tzimiskes as a stand for the ball when playing polo-like tzikanion (τζυκάνιον) games[80]. The glass workshop mentioned in the posthumous miracles of St. Photeine, dated to the 11th-12th century[81], as situated relatively close to St. Sofia at Constantinople, whose activity set fire to the district, miraculously sparing the nearby churches, might had been producing vessels of this simpler type. The simple, plain vessels, mainly stemmed beakers, possibly also with handles, that were found in large numbers as distorted shards in the early 9th century glass workshop, which is one of the two Middle Byzantine glass workshops excavated in Thessaloniki[82] (**fig. 23**), provide evidence of the nature and forms of these vessels. Interesting information is also found in the work of Cameniates, who specifically mentions the presence of glass vessels in Thessaloniki's market around year 904, unfortunately making no further remarks with regard to their exact origin or place of production[83]. Yet another example of possible local Anatolian production is thought to be presented by »Bleu coil base« vessels, which are found in Amorium,

80 Talbot, Evidence 145. – Nicephori Gregorae, Historiae Byzantinae 350.15-17. – On the sport see: Oxford Dictionary of Byzantium, Tzykanistirion 2137. – Lymperopoulos, Τζυκάνιο 6-16.
81 Talbot, Women and Religious Life in Byzantium 101.
82 Kanonides, Ανασκαφή εργαστηρίου υαλουργίας 143-153. – Papanikola-Bakirtzi, Everyday life in Byzantium 119-120 no. 115.
83 Cameniates, Στην άλωση 11; 71-78.

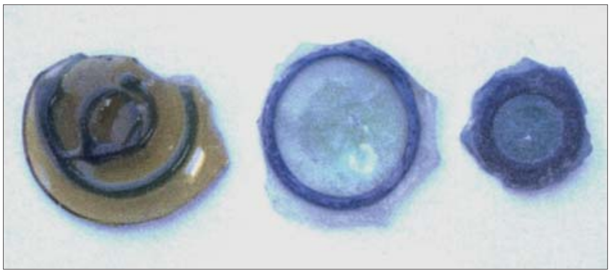


Fig. 24 Blue-coil bases, 10th-11th century from Amorium (prov. Afyonkarahisar, TR).



Fig. 25 Bowl from shipwreck, 9th or 10th century from Mljet.

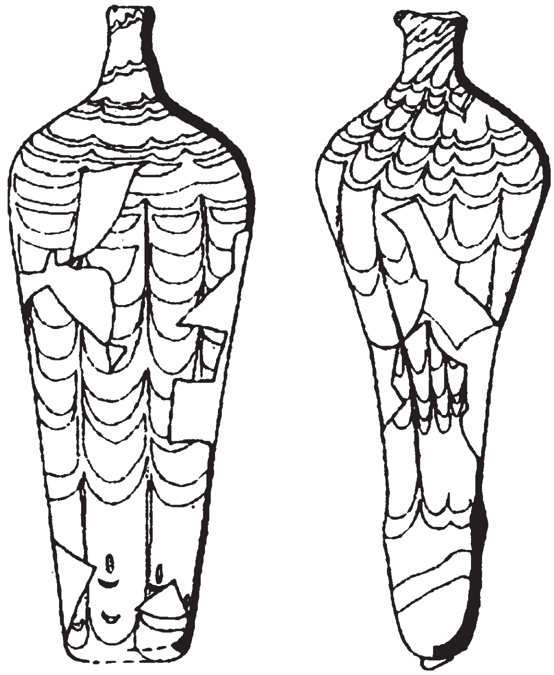


Fig. 26 Spindle-shaped unguentaria, Middle Byzantine period, from Kotor.

possibly dating to the 10th-11th century[84] (**fig. 24**). Recent finds from an 11th century site at Chalkidiki confirm this dating and provide evidence that this technique was also widespread in the European part of Byzantium[85]. Finally, southern Italy and Sicily also offer evidence of the distribution of glass vessels and their probable local production, partly on the basis of the testimony of Sabbetay Dannolo and partly on the basis of archaeological finds from several sites, which include bottles, lamps, stemmed goblets and tumblers[86].

Imports from the Caliphate

The 9th-10th century Byzantine shipwreck of Mljet on the Croatian coastline is evidence that the Byzantine demand for glass vessels was, at least in part, met by products from the Arab caliphates, extending as far West as the Adriatic Sea. This wreck revealed bowls, beakers and bottles, all forms bearing impressed rows of dotted circles and ovals, or occasionally blue thread around their rim or yellowish body[87] (**fig. 25**). Conical and dark-coloured spindle-shaped vessels with white decoration of Islamic origin were also traced to Montenegrin Kotor (Boka Kotorska), from a well dating from around the 12th century[88] (**fig. 26**).

84 Gill, Amorium 44-46; 68; 142-144; 173; 260 fig. 1/9; 2/9.

85 Unpublished material from the excavations of Zygou Monastery at Chalkidiki.

86 Lacerenza / Whitehouse, Dannolo 109-113.

87 Han / Brusić, Une découverte 271-281. – Although they are very similar to Islamic products, they were also considered as possible Byzantine products, imitating precious prototypes of rock crystal. Also, they were considered mass products of a probably coastal production centre. For a colour representation of these vessels see: Gluščević, Historical Glass 15 fig. 5, 2-5.

88 Križanac, Srednjovekovno staklo form I/1c.

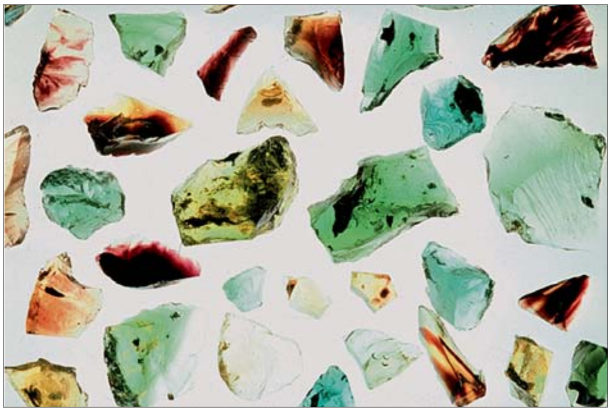


Fig. 27 Cullet from the shipwreck, approx. 1025, from Serçe Limanı.



Fig. 28 Cullet from the shipwreck, approx. 1025, from Serçe Limanı.

The shipwreck of Serçe Limanı (prov. Muğla, TR), dated around 1025 AD, offers clear evidence of the size of glass imports from the Islamic world (**figs 27-28**). Three metric tons of glass from Syria or Israel, one ton of cullet and two tons of broken Islamic vessels[89] were found in the wreck. More than 200 different forms of vessels are identified[90] in the cargo of this Byzantine ship (with approximately 10-20,000 vessels). The finds from the wreck do not prove that a corresponding number of Byzantine vessels were produced. The glass cargo might have been intended for the production of mosaic tesserae, or window panes. However, it is obvious that glass working was a serious activity in Byzantium, since its workshops needed large quantities of raw material in order to meet, if only in part, the demands of their society for glass products.

The evidence provided by the admittedly scarce glass finds from the private houses built during the Middle Byzantine period on the site of the ancient Athenian agora, where Islamic imports are one of the most distinguishable group of vessels[91], is equally important, although on a much smaller scale.

Tableware

Stemmed goblets are the most common form of Middle Byzantine drinking vessel and several examples have been found in the excavations at Corinth[92], Constantinople[93], Thessaloniki[94], Amorium[95] and at several Sicilian[96], Bulgarian[97] and Albanian[98] sites.

89 On primary production glass furnaces from this period and the size of the production see: Henderson, Raqqa New evidence 257-268. – Henderson, Archaeological Investigations at Raqqa 243-265. – Henderson, Glass Trade and Chemical Analysis 109-111. – Aldsworth / Haggarty / Jennings / Whitehouse, Tyre 49-66.

90 Bass, The Nature of the Serçe Limanı Glass 64-69. – Bass / Steffy / van Doorninck, Excavation of an 11th-Century Shipwreck 161-182. – Bass / Brill / Lledó / Mathews, Serçe Limanı passim.

91 Weinberg / Stern, Athenian Agora. – Stern, Ancient Agora.

92 Williams II / Zervos, Frankish Corinth: 1994 38. – Williams II / Zervos, Frankish Corinth: 1992 34. – Davidson, Corinth XII 111-112 nos 711-723 fig. 12.

93 Hayes, Saraçhane 403-404 nos 42-49 fig. 152 (dated ca. mid 10th century).

94 Kanonides, Ανασκαφή εργαστηρίου υαλουργίας figs 7; 10.

95 Gill, Amorium 160; 140-141 (on colorless examples with red swirling) nos 96-102 fig. 2/6.

96 Lacerenza / Whitehouse, Dannolo 109-113.

97 For examples from several sites, dated from the 7th to the 14th century: Avtoreferat of the unpublished Ph.D. of G. Dzinkov, published 1975, by the Archaeological Institute of Bulgarian Academy of Sciences.

98 For many examples from Butrint, dated approx. 818, which form three distinct groups see: Jennings, Butrint.



Fig. 29 Beaker from Zygou monastery, 11th-12th century (Frangokastro).

Drinking vessels sometimes include fairly tall, truncated conical beakers, occasionally decorated with threads [99] (**fig. 29**) or gilding [100], or mould-blown impressions [101].

Finally, cups or bowls are also present among middle Byzantine drinking vessels. Elaborate examples with cut decoration, probably only used for liturgical purposes, are found in St. Mark's treasury (**fig. 20**). Also, examples decorated with blue coils are noted in Amorium (**fig. 24**) [102] and Northern Greece [103]. Probable Islamic imports, decorated with mould-blown impressions, are known to have been in circulation as far as the Adriatic Sea [104] and are also found in the Serçe Limanı wreck [105]. Plain tumblers are reported from several sites in Sicily [106]. Large discs or bowls, occasionally footed, were also used, presenting probably the μεσοσκούτελλα of the sources [107]. Few surviving examples are known from St. Mark's treasury, used as patens (**fig. 20**) [108], and others, decorated with mould-blown impressions, from an Islamic shipwreck in the Adriatic Mljet [109] (**fig. 25**).

Bottles used as tableware for holding and pouring wine are found only occasionally, while smaller bottles from this period should be interpreted as unguentaria rather than as tableware receptacles [110] (**fig. 30**).

Unguentaria

The scarce finds from the capital dated to this period include hemispherical and spindle-shaped unguentaria (**fig. 31**) from a 12th century cemetery, whose Levantine or Venetian origin has been suggested [111], the latter

99 Gill, Amorium 43-44; 260 fig. 1/8. – Example from Chalkidiki, depicted in the calendar of 2004 The Monastery of Zygou-Frangokastron, published by Hellenic Ministry of Culture/10 Ephorate of Byzantine Antiquities.

100 Megaw, More gilt figs 2-3; 18-21. – Whitehouse, Two Medieval Drinking Glasses passim.

101 Han / Brusić, Une découverte fig. 5 c. d. f. – Although they are very similar to Islamic products, they were also considered as possible Byzantine products, imitating precious prototypes of rock crystal. Also, they were considered mass products of a, probably, coastal production centre. – For a colour representation of these vessels see: Gluščević, Historical Glass 15 fig. 5, 2-5.

102 Gill, Amorium 44-46; 68; 142-144; 173; 260 fig. 1/9; 2/9 (dated at 10th-11th century).

103 Unpublished material from the excavations of Zygou Monastery at Chalkidiki.

104 Han / Brusić, Une découverte fig. 5 a. b. e. – For a color representation of these vessels see: Gluščević, Historical Glass 15, fig. 5, 2-5.

105 Bass, The Nature of the Serçe Limanı Glass 64-69. – Bass / Steffy / van Doorninck, Excavation of an 11th-Century Shipwreck 161-182.

106 Lacerenza / Whitehouse, Dannolo 109-113.

107 Miklosich / Müller, Acta et Diplomata VI 245-46; I 241-246.

108 Grabar, La verrerie d'art Byzantine 111 nos 17-18 fig. 23.

109 Han / Brusić, Une découverte figs 1-3; 5 h-i. – For a color representation of these vessels see: Gluščević, Historical Glass 15 fig. 5, 2-3. 5.

110 Han / Brusić, Une découverte fig. 6. – Quite similar are some of the vessels found in graves by the basilica of Tigani in Mani of Peloponnesus, dated by the excavators to the 6th-7th century, but most probably belonging to a later phase of use of the same cemetery. – Drandakes / Gioles, Τηγάνι 252. – O kosmos tou Vyzantinou Mouseiou 260 pl. 227 β-ε.

111 Hayes, Saraçhane 401; 404-405 nos 75-76 fig. 153.



Fig. 30 Bottles from Tigani. Byzantine and Christian Museum.

similar to the one depicted in Panagia Olympiotissa's (reg. Thessaly, GR) wall painting (1298-1303) of myrophoroi[112] (**fig. 32**). This shape is familiar from Islamic glassware and probably represents the prototype of the Byzantine creations. Examples of these dark-coloured, spindle-shaped, Islamic vessels with festooned white decoration were also traced in Montenegrin Kotor, from a well dated to around the 12th century[113].

Small, spherical and occasionally ribbed bottles with a bulge at the base of their short neck that were found at Peloponnesus[114] (**fig. 30**) and in the shipwreck at Mljet[115] should, quite probably, also be interpreted as unguentaria.

Finally, cylindrical gilded bottles could also be interpreted as unguentaria[116].

Lamps

Glass lamps are the only type of ordinary utilitarian vessels that were relatively widespread during this period. Throughout the Byzantine period, lamps were probably the most widespread type of glass vessels.

112 Constantinides, The Wall Paintings 128-130.

113 Križanac, Srednjovekovno staklo form I/1c.

114 They are found in graves in the basilica of Tigani, at Mani of Peloponnesus, dated by the excavators to the 6th-7th century, but most probably belonging to a later phase of use of the same cemetery. – Drandakes / Gioles, Τηγάνι 252. – O kosmos tou Vyzantinou Mouseiou 260 pl. 227 β-ε.

115 Han / Brusić, Une découverte fig. 6 a. d.

116 Megaw, More gilt figs 4-9; 11-12.

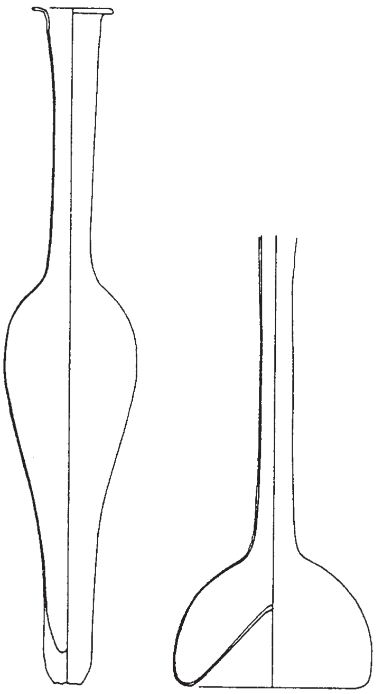


Fig. 31 Unguentaria, 12th century, from Constantinople.



Fig. 32 Myrophoroi, Panagia Olympiotissa. Detail.

They were in constant use, both in secular and religious buildings, and there are several records of them in texts. Monastic typica describe in detail the illumination of the monasteries during every feast day of the year, providing important information about the number and the exact locations of the glass lamps, as well as about the customary change from »everyday« glass lamps to silver ones on important feast days[117]. The fact that glass lamps were widely used and that they presented a relatively inexpensive and trivial article is also evidenced by the small amounts of money that the founders of monasteries provided in their endowments[118] for the annual renewal of glass lamps (ὑέλια). Further evidence is provided by the note that the term ὑέλιον was used to exemplify the most trivial kind of articles, as was the case in the typicon of the Panagia Kecharitomene at Constantinople (1110-1116), where it is written that the abbess of the convent is obliged to replace immediately, up to a single lamp (ὑέλιον), any destruction that would occur[119].

117 Talbot, Evidence 142 (where all relevant bibliography can be found).

118 Thomas / Constantinides-Hero, Byzantine Monastic Foundation Documents I 156.

119 Thomas / Constantinides-Hero, Byzantine Monastic Foundation Documents II 703. – The term has also been translated as »windowpane«: Talbot, Evidence 143 fn. 22.



Fig. 33 Lamp from Zygou monastery, 11th-12th century.

Stemmed lamps with a long cylindrical stem, usually solid or sometimes hollow, which hung in metal *polycandela*, present the most widespread form[120]. Lamps were also designed to be used as independently hanging lighting devices. These forms include wide hemispherical bowls[121], stemmed goblets[122], sometimes with small handles around their rim[123] (**fig. 33**), ribbed, dip-mould-blown, shallow, cylindrical bowls with three small handles[124] and larger globular ones with a narrow mouth and flat handles around their body[125], the latter probably the κρατῆρες of the sources[126]. Finally, it appears that drinking vessels, at least simple beakers of the appropriate shape, e.g. truncated conical vessels, were also used as lamps[127] (**fig. 29**).

Medical implements and vessels

Recorded uses of glass implements and vessels in medicine include vessels for the preservation of raw materials and substances, urinals, bleeding cups and breast-shaped baby-feeders.

Physicians thus made up a group of Byzantine society that, even during the period for which we have no relevant archaeological information, possessed and used glass vessels for storing raw materials and ready-to-use preparations, such as the κουρούπια[128]. The will of Abbott Savvas (1127/1128)[129], who bequeaths

120 Hayes, Saraçhane 404 no. 59; 70-71; 77 fig. 152-153. – Gill, Amorium 35-38 figs 1/2; 1/3. – Križanac, Srednjovekovno staklo 48-50 forms II/3; III/1. – Gasparetto, Les verres médiévaux fig. 1/C1. – Gasparetto, Matrici e aspetti fig. 16/a. – Olcay, Lighting methods 82 fig. 1.

121 Grabar, La verrerie d'art Byzantine 107-109 nos 13-14. – Ross, A tenth century Byzantine Glass Lamp 59-60. – An example in Dumbarton Oaks Collection and a representation of a lamp of this type in a 10th century Constantinopolitan book illumination with St. Luke (British Museum London, Add. Mss. 28815). – More recently on the lamp and its representations: Parani, Representations of Glass Objects 156-157, where a 12th century dating is suggested, as is also the domestic or secular use of this form of lamps.

122 They are fairly common in Byzantine period levels (11-12th century) at Corinth: Williams II / Zervos, Frankish Corinth: 1992 34. – Williams II / Zervos, Frankish Corinth: 1994 38. – Davidson, Corinth XII 111-112 nos 711-723 fig. 12.

123 Oral presentations on Frangokastro site (reg. Central Macedonia, GR), identified with Zygou monastery, dated between approx. 1030 and 1150 by excavator, Dr. I. Papangelos in consequent yearly reports at archaeological meetings on Archaeological Works in Macedonia and Thrace (Αρχαιολογικό Έργο στη Μακεδονία και Θράκη). Depicted in the calendar of The Monastery of Zygou-Frangokastron 2004, published by Hellenic Ministry of Culture/10th Ephorate of Byzantine Antiquities.

124 Unpublished find in exhibit at Ouranoupolis' Tower from Sana site (reg. Central Macedonia, GR), dated to the 12th century.

125 Pazaras, Ο τάφος των κτητόρων 411-412 fig. 5-6 (on finds from the Vatopaidi monastery founders' grave). – Myra: Olcay, Lighting methods 86 fig. 6 h-j. – Gill, Amorium 261 nos 306-308.

126 Talbot, Women and Religious Life in Byzantium 99-100. – Thomas / Constantinides-Hero, Byzantine Monastic Foundation Documents 696; 698; 741; 754.

127 It was found in connection to the founders' grave. Depicted in the calendar of The Monastery of Zygou-Frangokastron 2004, published by the Hellenic Ministry of Culture/10th Ephorate of Byzantine Antiquities.

128 Although no firm evidence exists for the actual shape of the κουρούπια, they could be very similar to the large, late 10th-11th century Islamic vessels from Caesarea Maritima (IL) with a capacity of 19 and 8 liters respectively: Pollak, A Fatimid hoard 239 fig. 4. – For ceramic κουρούπια see: Bakirtzes, Τσουκαλολάγηνα 122-124.

129 Miklosich / Müller, Acta et Diplomata VI. 245-246.

three large (τρανά) glass κουρούπια and another glass one for θηρικόν, i.e. antidotes[130], containing 50 exagia or less, i.e. 221.55 gr[131] is enlightening with regard to the different sizes of vessels under this term. Physicians also used glass implements for diagnosis via the method of uroscopy. In the 9th century, Theophilus Protospatharius is the first to present an organised theory on the use of urine in diagnosis in his work περί οὔρων[132]. In the 11th century, uroscopy and the examination of the pulse present typical diagnostic methods generally used by physicians and certainly used on important patients, such as abbots, at least according to Theodoros Prodromos[133]. The shape of these urinals (οὔρων δοχεῖα) must had been quite similar to the contemporary beakers (ποτήρια), according to Eustathios of Thessaloniki[134], who mentions that, when Normans captured Thessaloniki, they mistook and used urinals as drinking vessels. Urinals must also have borne some similarities to, at least some, glass lamps, (λαμπτῆρες) since, according to Eustathios[135], the same Normans used these lamps for urinating.

Bleeding cups (σικύες) are another medical implement that must have continued to be produced from glass[136]. A further specialised use of a glass vessel, already familiar from the Roman period, is the baby-feeder (πεφιλοτεχνημέναι θηλαί)[137], a vessel in the form of a woman's breast, occasionally made of glass, at least as is noted specifically in the vita of St. Theodor the Tyron »ἀγγεῖον ὑελοῦν ἔχον ἐκτύπωμα τιτθίου«. The vita presents incidents from Amaseia during the reign of Maximian, but the oldest surviving manuscript dates to the 10th century, offering the terminus ante quem for this use of glass baby-feeders, according to the vita[138].

Vessels of different sizes used for the long-term preservation of agricultural products are also mentioned in texts. Thus, in the 10th century, »Geoponica« glass vessels (σκεύη) are mentioned as the most suitable for storing oil, being the most agreeable to its nature[139], βικία for the long-term storage of mulberries[140] and glass ποτήρια, a term that, in this case, must refer to considerably larger vessels sealed with wax for storing figs[141].

Ink bottles

Also, according to the depictions of Evangelists on wall paintings[142], writers and book illuminators[143] used glass vessels to store quantities of ready-to-use ink[144]. These are depicted as plain, handleless, long-necked, spherical bottles. The reason for this preference may lie in the fact that only glass could guarantee the necessary purity and good quality of the ink due to the chemical stability of the dilution.

130 Kriaras, Λεξικό VII 124 s.v. Θηριακή.
131 Schilbach, Byzantinische Metrologie 272.
132 Theophilus Protospatharius, De urines 261-162.
133 Hesseling / Pernot, Poèmes prodromiques 68 coll. 403α. – In a Prodoromos' poem there is also a record on glass chamber pots used for the examination of feces see: Talbot, Evidence 144 fn. 34.
134 Eustazio di Tessalonica, La espugnazione di Tessalonica 116 l.5.
135 Eustazio di Tessalonica, La espugnazione di Tessalonica 116 l.5.
136 Paulus Aegineta, Epitomae medicae libri septem 6.41.2.3-5.
137 Soranus, Gynaeciorum libri IV 2.45.4.5.
138 Sigalas, Βίος και ανατροφή του Αγίου Θεοδώρου 225 col. 6-9.
139 Geoponica 9.19.10-11. – For relevant, large Islamic vessels, dated to the late 10th-11th century from Caesarea Maritima see: Pollak, A Fatimid hoard 239 fig. 4.
140 Geoponica 10; 69,1.
141 Geoponica 10; 56,6.
142 Mavriotissa at Kastoria (reg. West Macedonia, GR): Pelekanides, Καστοριά pl. 65; 66 β. – Pelekanides / Chatzedakes, Καστοριά 71-72; 81.
143 Kadas, Το εικονογραφημένο χειρόγραφο αρ. 2 pl. 4 (St. Panteleemon (Mt. Athos) Ms no. 2 f. 55v). – Parani, Representations of Glass Objects 158-59.
144 Mioni, Εισαγωγή στην ελληνική παλαιογραφία 43. – Hunger, Ο κόσμος του βυζαντινού βιβλίου 110.

Religious uses

Chalices and patens

Glass lamps of the same forms were used for lighting both secular and religious buildings. Other uses of glass recorded by archaeological finds include use as chalices and patens. The loot from the Constantinople vessels of St. Mark's treasury includes one cup with plastic prunts that, on its metal mount, bears an inscription referring to Holy Communion; this is easily interpreted as a chalice [145]. On the strength of its shape and origin, the famous »St. Mark's bowl« decorated with mythological scenes can also be identified as a chalice (**fig. 19**). Liturgical use, that of a paten, should also be ascribed to the wide, shallow bowls from the same treasury [146] (**fig. 20**).

Ampoullae/myrrh holders

Written sources compensate, at least in part, for the paucity and scarcity of archaeological finds. For instance, we learn that glass vials were used for transporting holy water and/or myrrh from large pilgrimage centres, such as St. Nicolas' complex at Myra. It is known that such a vial miraculously survived intact when it fell onto the stone floor of the church during the operation of the Venetians to transfer Saint's relics from Myra in 1099-1100 [147]. Also, cylindrical gilded bottles [148] (**fig. 18**) may have been used to hold similar substances.

Burial customs

Vessels of any type do not generally occur in burials after the 7th century when Christianity and its practices were fully accepted by the majority of the population of the Byzantine Empire. They reappear only during the Late Byzantine period. The only objects left on the bodies of the deceased were items of clothing and a few jewels, mainly the ones that were difficult to remove. This change in burial habits and practices deprives archaeology of its most essential source of information, at least for glass vessels that, both for earlier and later periods, relies on the intact or fully preserved vessels found in the necropolises.

General remarks

Finds originating from glass workshops are very rare and the forms of their products still remain largely unidentified. Part of the demand for raw glass or cullet was met by imports from the Caliphate, where large, primary glass workshops were active. Only a few forms of vessels were imported; the majority of the finds

145 Grabar, La verrerie d'art Byzantine 110 no. 16 fig. 22. – No. 12 can also be interpreted as a chalice. It should also be noted that the prohibition of glass vessels as chalices, valid in the Western Church by the 9th century (Braun, Das Christliche Altargerät 33-34; 45-49), was never actually decreed by eastern Christianity. Also, late Byzantine clay chalices found in excavations, e.g. Mount Athos' monasteries, record that liturgical vessels were not necessarily made of metal. For the burial use of clay chalices in clergy's graves see: Ivison, Supplied for the Journey to Heaven 147-193. – For their use in the liturgy see: Ivison, Chalices 216-220.

146 Grabar, La verrerie d'art Byzantine 111 nos 17-18 fig. 23. – For an early 3rd century introduction to glass patens in liturgy see: Liber Pontificalis, for the period of papacy of pope Zephyrinus.

147 Anrich, Hagios Nikolaos 437.

148 Megaw, More gilt figs 4-9; 11-12.

present local products, which are free blown, undecorated and usually made from dark brownish glass and only occasionally decorated with applied threads and coils. Groups of a few specially decorated vessels, gilded or with cut decoration, testify to the nature of products available to the aristocracy and high clergy.
To summarise, we notice that, whereas written sources mention all uses of glass vessels known from the Early Christian period, excavations firmly dated to the Middle Byzantine period, which are very limited anyway, yielded few glass finds, mainly, lamps and unguentaria; tableware (bottles, beakers and stemmed goblets) is found in even smaller quantities.

LATE BYZANTINE PERIOD (13TH-15TH CENTURY)

Glass vessels reappear once more in large numbers in strata dating after the 13th century, at least in big urban or religious centres, where the economy again flourished[149].
Glass workshops, or any other remains of glass production dating back to the Late Byzantine period, are not known, at least not from the regions under Byzantine domination[150]. It is interesting that, in order to obtain glass lamps, even important monasteries in large cities, such as St. Eugenios' in Trebizond, had to send its people to Constantinople or Armenia[151]. There was an absolute absence of any kind of small industry, at least in the 15th century Byzantine Peloponnesus and the need to send young people to Italy to learn, amongst others, the craft of glasswork, is clearly stated in the letter of Cardinal Bessarion to the Despot and later Emperor Konstantinos Palaiologos[152]. However, the fact that the chapter regulating the placing of glass and iron workshops in abandoned parts of the cities or even at their outskirts was still needed, and was included in Armenopoulos' Hexabiblos[153], makes it clear that such workshops must have existed in the first place.
Even if we accept that they were widely produced, late Byzantine glass vessels are still unknown to us. Consequently, we started by presenting the imported material according to production area that seemed to meet the demands of the Byzantines.

Imports

New economic conditions and extensive trade with Western cities favoured the import and distribution of Italian glass vessels to several urban centres of the empire and the Balkan kingdoms. Mainly bottles

149 Matschke, Late Byzantine Urban Economy passim, esp. 463-468; 494-495.
150 There are some unpublished archaeological finds indicating glass production at Crete during the Venetian occupation, activities which are also attested by information from Venetian archives. – See: Han / Zecchin, Prezence balcaniche 80-81 on a glass workshop active probably at Chania/Candia (reg. Kreta, GR) during the period 1330/1340 and on Cretan and Venetian glassworkers active during the 14th and 15th century in Venice and Crete. – Maltezou, Un artisan verrier crétois 537-541 on a Cretan glassworker, Antonio Foca from Candia, who was paid at 1401 by a Jewish dona Jacoba in order to exercise his craftsmanship on cristalli (»de arte cristalarie«) for her. Also, the Agora South Centre glass workshop at Corinth can now be dated to the 13th-14th century during the Frankish occupation of the city. For the new dating see: Whitehouse, A reassessment. – Whitehouse, The Date. – However, there is clear archaeological evidence that the workshop was built and probably already active during the 12th century and that the Franks simply continued to use the same area and building for the same purpose: Williams II, Frankish Corinth 431. – Sanders, Corinth 652. – Parani, Representations of Glass Objects 168.
151 Rosenqvist, Lamps of St. Eugenios 52-59. – The text is from the 14th century but refers to miracles of approx. 900. The same text provides us with important information on the transportation of the glass articles, either by ship or on men's backs, in baskets, probably filled with straw.
152 Lambrou, Υπόμνημα 26; 30; 46.
153 Εξάβιβλος book 2, title IV »Περί καινοτομιῶν«, § 19 »Περί ὑελουργῶν καί σιδηρουργῶν« see: Armenopoulos, Πρόχειρον 117-118. – It should be note, that Armenopoulos copies entire passages from Julian's from Ascalon lows, written approx. 531-533 see: Armenopoulos, Πρόχειρον λη'-λθ'.



Fig. 34 Angastaria bottles, 14th-15th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

(**fig. 34**), beakers and tumblers were imported[154]. Venetians had an extensive and well-established trade network in the Byzantine seas and Levant in general, which also seems to have been used for distributing glass products[155]. It is also well known that, at least from the late 13th century, the Venetians were in close contact with Levantine glasswork and its technological improvements, since they had based their glass industry on good quality Levantine plant ash, which was constantly imported to Venice and was used as

154 The oldest surviving reference to Venetian imports of glass vessels to Byzantium, stemmed beakers (»moioli con piede«), dates back to 1276 see: Zecchin, Vetro e vetrai 6.

155 Laiou, Venice as a Centre 18-19. – Parani, Representations of Glass Objects 163. – A record on the account book of Giacomo Badoer is very illustrative on the scale of Venetian imports. Badoer was a Venetian merchant active in Constantinople, who imported more than 2500 vessels (footed goblets or jugs, bottles, footed dishes and beakers) in a single load in June 1437 see: Maltezou, Un artisan verrier crétois 539. – On the continuation of this trade-line during the Ottoman period see: Rogers, Glass in Ottoman Turkey passim.



Fig. 35 Lentoid unguentaria, 14th-15th century from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.



Fig. 36 Lentoid unguentarium, 13th-14th century from Didymoteicho, Thrace.



Fig. 37 St. Demetrios at Peć. Birth of Virgin Mary, 1345. Detail.

ballast for the ships that were transporting mainly cotton from Levant[156]. They also imported glass cullet for remelting[157]. Constantinopolitan clay was preferred for the production of crucibles for melting glass in Venice and, consequently, clay, as well as finished vessels, was imported on an ongoing basis during the 15th century[158].

It appears that Islamic vessels were in almost the same widespread distribution. Only a few forms of the rich and diverse Islamic typology appear in the excavations of Byzantine sites, i.e. flasks and unguentaria, although written sources also mention Alexandrian beakers (ὑελοβίκιον)[159]. Narrow-mouthed vessels prevail, appearing in varying shapes and sizes, such as lentoid and ring-shaped vessels (**figs 35-36**)[160]. They were used, amongst other things[161], for transporting and holding myrrh or holy water, a fact that explains why they were placed in graves. Large, enamelled mosque lamps were, at least occasionally, also imported[162]. Spindle-shaped unguentaria, often of dark colour and decorated with white festoon, familiar in the Arabic world from the 11th and mainly 12th-13th century[163], were present in urban Balkan centres, which were already politically independent but still under the cultural influence of Byzantium, as is evidenced by finds from Kotor[164] and the wall paintings of St. Demetrios at Peć (Kosovo) (1345)[165], (**fig. 37**). A simpler, undecorated example of the same form is presented on the wall paintings of Panagia Olympiotissa (1289-1303) (**fig. 32**)[166] and the mosaics of Chora monastery at Constantinople[167].

The group of 15th-16th century vessels (**fig. 38**), which does not fit into either of the above-mentioned groups, although it shares some of their characteristics, is equally important. It is known that, from the 13th century onwards, Venice produced special, modified products oriented towards specific markets and tastes[168], which were mentioned specifically in documents as being French, German, Hungarian, etc[169]. It is also known that Tamerlan's invasion (1400) led to the destruction of glassworking in Syria[170] with the transfer of the craftsmen to his capital Samarkand. It seems that Venetians filled this void with ordinary products and also with specially modified products imitating the shapes and decorations of Islamic prototypes. With regard to the decorative motives used on them, they are seen to have essential differences to their prototypes (**fig. 39**). The geometric pattern used on these vessels that consists of rows of lozenges and triangles is not at all common amongst Islamic products, which were usually covered with arabesques and floral motives[171]. The vessels of this group could be ascribed to the latter, namely to the modified Venetian products[172].

156 Jacoby, Raw materials 70-71.

157 Carboni / Lacerenza / Whitehouse, Tyre 148-149.

158 Jacoby, Raw materials 78-79.

159 Even to the Constantinopolitan society where the incident took place, the beaker must have presented a rare or precious object because it was added to an already considerable payment of 5 gold coins. On the incident see: Miklosich / Müller, Acta et Diplomata I 548-549. – Talbot, Evidence 143.

160 Papanikola-Bakirtzi, Everyday life in Byzantium 472-473; 575-577 nos 649; 811-813; 815.

161 Koukoules, Βυζαντινών Βίος και Πολιτισμός V 164-165 fn. 1 (in connection with the term Κανί and ροδοκάνι).

162 Han, Une trouvaille du verre syrien 92-99.

163 Carboni, Glass from the Islamic Lands 304-305 nos 80a-b.

164 Križanac, Srednjovekovno staklo form I/1C pl. I 7-8; II 9-16.

165 Djurić, Vizantijske Freske pl. XXXV.

166 Constantinides, The Wall Paintings 128-130.

167 Parani, Representations of Glass Objects 163 fig. 3.

168 It is also evident that they were adding decorative elements to typical European vessels and that these might have made them more attractive to the eastern markets. These decorative elements include the cup-like rim or the zigzag thread around the neck. See: Han, Nalazi 177-178 for such a biconical bottle from Kolovrat (dist. Prijepolje, SRB).

169 Zecchin, Maria Barovier 106 (information from a document of 1496). – Wenzel, A Reconsideration 68. – Han, Neke karakteristike 56-57.

170 Harden, Post-Roman 93-94; 97.

171 Decoration is partly visible on the vessel presented at: Papanikola-Bakirtzi, Everyday life in Byzantium 578 no. 816. – And on the vessels from Athens see: Antonaras, Venetian Glass Pilgrim Vessels 200 fig. 3. – Several examples demonstrate that the technique of applying the décor is quite different from the well-known firing of the Islamic glassware; it is not as stable and leaves the decorative substance on the surface of the vessel.

172 Antonaras, Venetian Glass Pilgrim Vessels 199-202. – Lazar / Willmott, Gnalić, forms S 17-17 a; 22 a; 24 b-c.



Fig. 38 Thessaloniki. Lentoid unguentaria 15th-16th century. Museum of Byzantine Culture, Thessaloniki.



Fig. 39 Lentoid unguentarium,15th-16th century.
Archaeological Museum of Thessaloniki.

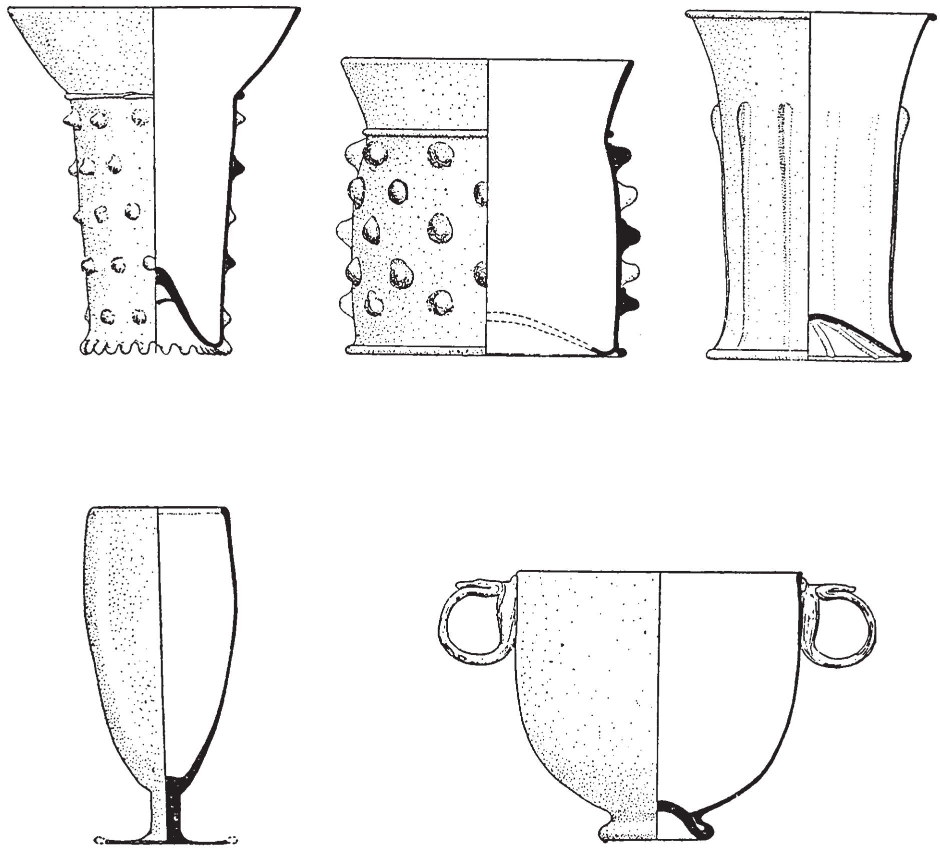


Fig. 40 Drinking vessels from Corinth, Late Byzantine period.

Tableware

The majority of the preserved vessels from this era are tableware, i.e. jugs, bottles, beakers and tumblers. These vessels were often also used for liturgical purposes: beakers as lamps in graves or churches and bottles as containers for holy water or myrrh.

Drinking vessels

It seems that almost all drinking vessels are Venetian products, or directly influenced by Venetian production (**fig. 40**).
According to the Venetians, stemmed goblets, which were produced throughout the Byzantine period [173], probably represent the most characteristic Byzantine drinking vessel, the »moioli cum pedibus de Romania« [174].

[173] Davidson, Corinth XII 111 no. 723 fig. 12. – Whitehouse, A reassessment. – Han, Neke karakteristike 55 fig. 1. – Avtoreferat/Rezime of the unpublished Ph.D. of G. Dzinkov, published 1975, by the Archaeological Institute of Bulgarian Academy of Sciences. – For 16th century examples see: Petricoli, Gnalić fig. 3. – Lazar / Willmott, Gnalić 27-39.

[174] Reference from approx. 1270/1280, where they are mentioned as part of the cargo that was to travel from Venice to Byzantium see: Zecchin, Denominazioni 26.





Fig. 41 Bowls, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.



Fig. 42 Beaker, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

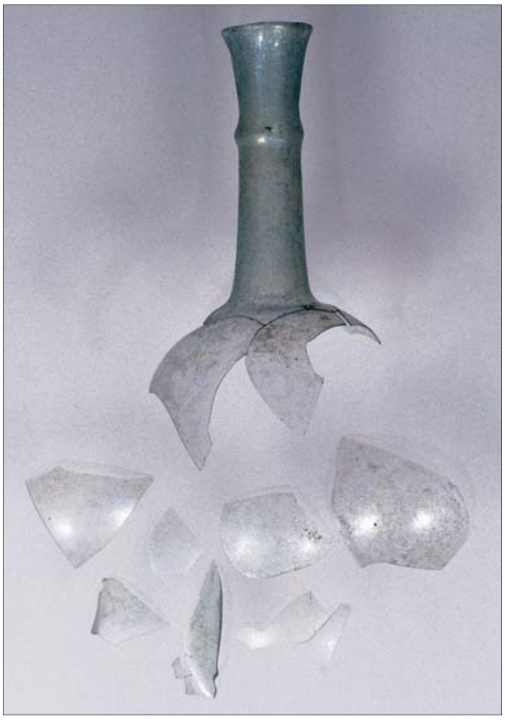


Fig. 43 Bottle,14th-15th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

Several types of beaker appear in this period. As a whole, these appear to be Italian products: Prunted cups and beakers[175], which are dated to the 13th-14th century[176]. Ribbed beakers with vertical ribs[177], deep handled cups, almost like a skyphos[178]. Beakers with a characteristic curved rim and a thin,

[175] They are quite widespread, probably more in the regions under western political or economical/commercial domination, but also in other regions: Weinberg, A Medieval Glass Factory 308-323. – Davidson, Corinth XII nos 742-743. – Whitehouse, The Date 659-660. – Gasparetto, Matrici e aspetti 86-88. – Whitehouse, A reassessment 75-76. – Vavylopoulou-Charitonidou, Βυζαντινή κεραμική στην Άρτα 468. – Zekos, Παπίκιο 284 pl. 122-123. – Unpublished examples from the castles of Platamon (reg. Central Macedonia, GR), Pydna (reg. Central Macedonia, GR) and Rendina (reg. Central Macedonia, GR). – Han, Neke karakteristike 55 fn. 57. – Han, The Origin and Style 118-119 fig. 3. – Bikić, Trgovinski promet 91 fig 3. – Dekowa, Styrmen fig. 2 no. 6.

[176] For a long time, they were considered Corinthian products, which were also produced in Italy after 1147, when Normans moved Greek glassworkers in Italy. However, the large number of 13th-14th century finds in Italy, along with the new dating of the Agora South Centre glass workshop at Corinth, confirm the conclusion that they were originally produced in Italy and that they should be dated to the 13th-14th century see: Whitehouse, Notes on Late Medieval Glass in Italy 167 (where all older bibliography can be found) and 172-174 (with exhaustive catalogue of relevant finds). – Whitehouse, A reassessment passim. – Whitehouse, The Date 659-660.

[177] Han, The Origin and Style 124-125 fig. 11. – Williams II / Zervos, Frankish Corinth: 1992 28 nos 31-32 fig. 9 pl. 8. – Williams II / Zervos, Frankish Corinth: 1993 15-16 no. 17 fig. 98 pl. 6. – Davidson, Corinth XII 114 no. 746 fig. 14. – Whitehouse, A reassessment 74.

[178] Davidson, Corinth XII 111 no. 724 fig. 12. – Whitehouse, A reassessment 74.

usually blue, thread wrapped around the rim (cupped rim vessels with blue threads) appear in the western Balkans[179].

Apart from these taller beakers, tumblers with an ovoid or conical body that are optic blown[180] or, less frequently, free blown[181], occasionally with a blue thread wound around the rim[182], were also used as drinking vessels (**fig. 41**). Also, there are more elaborate ribbed examples, complete with blue thread around the rim[183]. Finally, plain, colourless, short conical beakers appear to have been in use during the Late Paleologan period[184] (**fig. 42**).

Ch. K. Williams and O. H. Zervos made some interesting comments with regard to the use of the Corinthian finds. Glass beakers and cups are of approximately the same capacity (60-80 ml), which was appropriate for wine or distilled liquors, or both, and not for long drinks, such as beer or water. Since no pottery vessels of similar size are found (at least not in Corinth), it is possible that glass beakers were exclusively used for these drinks[185].

Bottles

Bottles, mainly of western origin, are present in various forms, such as *inghistere* or *angastaria*, with a spherical, obliquely ribbed body standing on an occasionally tall conical inherent base[186] (**fig. 34**). The various forms also include bottles with a long neck, cut-out bulge, plain[187] or with vertical ribs[188], spherical and pyriform body (**fig. 43**), as well as plain cylindrical bottles[189]. A different group of vessels (bottles and lamps) made of opaque red glass were produced at Corinth's glass factory[190].

Dark blue cylindrical bottles with painted decoration (overlapping ogive arches, outlined in black).[191] present probable eastern products[192].

Ewers with a long, curved spout[193] are yet another form of vessel, possibly of Italian origin, or rather originating from Italian prototypes. They appear from the Late Paleologan period onwards, probably known as καννίον[194], and they are quite common in the post-Byzantine period, when they become more massive, known under the Turkish word ιμπρίκια[195]. During the 13th and 14th century, they were used

179 These beakers are only found there and probably present a Venetian product adapted to the taste of the local market see: Wenzel, A Reconsideration 63-76.

180 Williams II / Zervos, Frankish Corinth: 1992 25 no. 24 fig. 8 pl. 7. – Williams II / Zervos, Frankish Corinth: 1993 16. – Davidson, Corinth XII 112-114 no 736-739 figs 14-15. – Whitehouse, A reassessment 74. A similar bowl was also found in Thessaloniki (unpublished).

181 Davidson, Corinth XII 107; 112 nos 685; 691-693; 735 fig. 12; 14. – Whitehouse, A reassessment 74. – A similar bowl was also found in Thessaloniki (unpublished).

182 Williams II / Zervos, Frankish Corinth: 1994 38 pl. 11. – Davidson, Corinth XII 108-09; 112 nos 694; 731 figs 12; 14. – Whitehouse, A reassessment 74.

183 Han, Staklo 221 (color plate opposite to p. 220).

184 Papanikola-Bakitzi, Every Day Life in Byzantium 580 no 812.

185 Williams II / Zervos, Frankish Corinth: 1992 34.

186 Han, The Origin and Style 119 fig. 5. – Antonaras, Two Venetian vessels 37-40 (with exhaustive bibliography).

187 Williams II / Zervos, Frankish Corinth: 1994 38. – Davidson, Corinth XII 117; 119 nos 773-774; 780 fig. 17 (dated to the 13th-14th century by Whitehouse, A reassessment 74). – Križanac, Srednjovekovno staklo 36-37 form I/4A. – Unpublished find from a palaeologan cemetery in Thessaloniki, exhibited at the Museum of Byzantine Culture.

188 Williams II / Zervos, Frankish Corinth: 1993 16. – Davidson, Corinth XII 119 nos 782-784 fig. 17. – Williams II / Zervos, Frankish Corinth: 1992 nos 8-9 pl. 37.

189 Williams II / Zervos, Frankish Corinth: 1992 29 nos 34-38 pl. 9. – Križanac, Srednjovekovno staklo 34-35 form I/2, I/3.

190 Davidson, Corinth XII nos 699; 759; 802; 807. – Davidson, A Medieval Mystery 141 fig. 30 (dated to the 13th-14th century).

191 Williams II / Zervos, Frankish Corinth: 1992 29 no. 33 fig. 9.

192 They appear to be similar to the vessels with marvered trails, quite common in Islamic glass during 12th-13th century see: Carboni, Glass from the Islamic Lands 291-321 (where several examples are examined).

193 A pair of them, one filled with oil and the other with wine, is depicted by Massolino, before 1424, in a niche at Capella di Santa Elena della Compania della Croce in St. Stefano at Empoli (reg. Tuscany, I) (personal observation).

194 Kriaras, Λεξικό VII 334 s. v. καννίον / καννίν.

195 For glass (γ)ιμπρικάκια used in the preparation of wooden icons see: Dionysiou tou ek Fourna, Ερμηνεία 19; 242. Unpublished, intact examples of presumably post-Byzantine date, are on display at Ankara's Museum of Anatolian Civilizations. – For their depiction on wall paintings of Philanthropenon monastery (reg. Epirus, GR) see: Acheimastou-Potamianou, Η μονή του Αγίου Νικολάου των Φιλανθρωπηνών fig. 35 (appearing near by evangelist Mathieu).

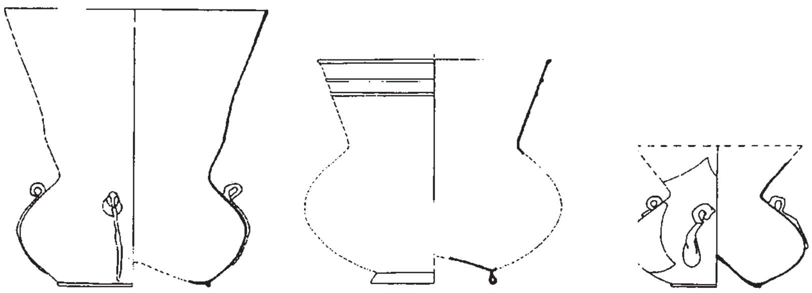


Fig. 44 Glass Lamps from Kotor.

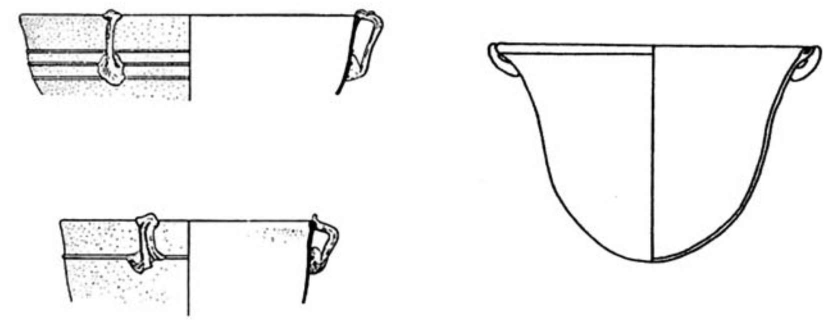


Fig. 45 Glass Lamps from Ravanica (dist. Šumadija, SRB) and Corinth.

in Italy for liturgical purposes, i.e. for the preparation of Holy Communion. They were used in pairs, one for water and the other for wine, representing substitutes for more expensive metal vessels of similar shape [196].

Plates and dishes/presenting food

Glass vessels were also used, at least in monasteries, for presenting food. It appears that they existed in two sizes, smaller ones, the γαβαδίτζια, and bigger ones, the σκουτέλλια, or μεσοσκούτελλα [197], the former were probably used to serve smaller quantities or a single person and the latter were used as platters, placed at the centre of the table. [198]

Lamps

Glass lamps are a pretty common find appearing in several shapes and sizes, from large mosque lamps to simple bowls for inserting into *polycandela*.

196 Davidson, Corinth XII no. 679. – Whitehouse, A reassessment. – Gasparetto, Les verres médiévaux 240; 246-247 fig. 3. Križanac, Srednjovekovno staklo 38-39 form I/5. – Popović / Bikić, Kompleks 94-95 pl. 95. – Cunjak, Smederevska Tvrdjava pl. XXXV.1. – Thessaloniki: St. Demetrios' church (unpublished).

197 Miklosich / Müller, Acta et Diplomata VI 245-246; l. 241-246. Bound in a codex dated at 1201. The document itself was written in 13th or early 14th century handwriting.

198 On the changes of their eating habits and the consequent change in the size and shape of clay vessels already at the very end of the 11th century see: Sanders, Corinth 651.

Apart from a few obviously imported Islamic lamps[199], simpler imitations of them, possibly Venetian products[200], must have been in wide circulation (**fig. 44**). They had a flared rim, usually decorated with blue threads, a spherical or ovoid body and three or more small handles with a long »tail« ending almost at the base[201]. There are also smaller lamps in the form of hemispherical or deeper bowls with tiny handles around their rim (**fig. 45**)[202]. However, the majority of churches and secular buildings were lit by small, individual hanging lamps in the form of stemmed goblets[203], while a few hung in metal holders and *polycandela*. Lamps with a small bowl and long, solid stem[204], which made them more stable in their metal fittings, were mainly used for this purpose. Hemispherical bowls were also used either for the central socket of *polycandela*, or as liners for ordinary, single metal lamps, often lit in front of the icons (**fig. 46**). In comparison with what is customary even today, suitably-shaped beakers e.g. truncated-conical beakers with a flared rim, could also have been used as lamps.



Fig. 46 Lamp, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture (Thessaloniki).

Ink bottles

Some relatively small vessels, either handleless[205] or with a single handle[206] (**fig. 47**), were used by scribes to store ink, which was bought or prepared in larger quantities. The scribes decanted the amount they needed for daily use into their inkwells. Although no vessels with remnants of ink have been preserved, with the aid of relevant representations on wall paintings and manuscripts, it is possible to link their shape to two surviving examples, naturally found in a completely different context[207]. Written sources from this

199 Han, Une trouvaille du verre syrien 92-99 (fragments from Peć [Kosovo, Serbia], with painted decoration, dated to the end of the 14th century). – Minić / Vukadin, Stalać 106; 201 fig. 67/10; cat. no. 89 (fragments of one example from the site of Stalać [dist. Raška, SRB], dated to the end of the 14th century. Two more unpublished examples from Hisar near Leskovac [dist. Jablanica, SRB] are also mentioned there). – Vukadin, Dve jame 255 pl. IV/3 (one example from the church of St. Spas in Žiča, dist. Raška, SRB).

200 Most of them have the quality of glass known from other Venetian products, and also their shape is identical with the one known from the drawing in Marcantonio Barbaro's letter of 1569 sent to the Venetian authorities asking for 900 lamps for the Great Vizier Mehmet Sokol see: Charleston, The Import 164-165.

201 Han, The Origin and Style 125 fig. 12. – Križanac, Srednjovekovno staklo 50-53. – Han, Tri Veka 258-259.- Williams II / Zervos, Frankish Corinth: 1992 23; 25; 33 fig. 6-7; 10 pl. 7/18a; 8/20a-b; 9/19, 23; 10/22. – Williams II / Zervos, Frankish Corinth: 1994 38.

202 Davidson, Corinth XII 112 no. 733-734 fig. 14 (interpreted as cups, dated to the 13th-14th century by Whitehouse, A reassessment 74). – This form, probably in a deeper version, is also found quite often in 14th-15th century Serbian monasteries see: Mandas, Jedna Skrivnica 535-536 fig. 12. – Minić, Boca i kandila 63-67, both with bibliography on analogous finds from other sites, like Manasija (dist. Pomoravlje, SRB), Nova Pavlica (dist. Raška, SRB), Studenica (dist. Raška, SRB), Žiča (dist. Raška, SRB) and Mileševa (dist. Prijepolje, SRB).

203 Križanac, Srednjovekovno staklo 48-49. – Han, Tri Veka 135 T. XI/2, 5. – Compare Petricioli, Gnalić 86 fig. 3.

204 Križanac, Srednjovekovno staklo 49-50.

205 Aspra-Dardavake / Emmanouel, Η μονή της Παντάνασσας 162-166.

206 Protaton, Istoria tou Ellenikou Ethnous IX 454. – St. Mark on ms A46 at Megisti Lavra (Mount Athos, GR) and St. Mathew on ms 5 of Philotheou monastery (Mount Athos, GR). – Parani, Representations of Glass Objects 158.

207 Handleless examples were found in late Paleologan graves see: Papanikola-Bakirtzi, Everyday life in Byzantium 472; 580, nos 648; 820. – While the handled example was built in the apse of the Paleologan monastery of Vlatades at Thessaloniki see: Makropoulou, Μονή Βλατάδων 277 pl. 6στ. – Thessalonike, Istoria kai Techne 56 fig. on p. 55.



Fig. 47 Bottles, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

period mention that good quality ink was not easy to obtain and that it was sold in glass bottles[208]; in three, 14th century letters, sent to a certain »Tzykandeles«, the dispatcher asks for some good quality ink in order to continue his work as a copyist. Equally interesting is the information to the effect that the bottles were not filled, rather only their lower part contained ink. This description brings to mind the depictions of half-empty ink bottles on the writing tables of Evangelists in wall paintings and book illuminations.

Medical and alchemical implements and vessels

A special note should be made to the vessels used by Byzantine physicians and alchemists. It is known that they used glass urinals, bleeding cups, alembics and vessels for storing and preserving goods. Uroscopy was an especially widespread diagnostic method among Byzantines. During the 14th century, the use of urinals (ἀμίδες) is so widespread that the generic term ὑέλιο becomes synonymous with the word ἀμίς, at least according to M. Planoudis' work περί ὑελίων, which refers to different types of unhealthy urine and how the physician can diagnose the disease on the basis of its colour and texture[209].

Glass urinals were described in great detail in medical compendia because the quality of their glass, their dimensions and also their decoration could have a significant effect on the accuracy of the diagnosis, as described, for example, in the 14th century six-volume work of Joannii Actuarii, De urinis[210]. It seems that,

208 Lambrou, Λακεδαιμόνιοι βιβλιογράφοι 171-173.

209 Ideler, Physici II 318-324 »Τοῦ σοφωτάτου κυρίου Μάξίμου τοῦ Πλανούδη περί τῶν ὑελίων πασῶν τῶν ἀσθενειῶν τῶν ἐν τοῖς ἀνθρώποις, ἐπερχομένων στίχοι«.

210 Ideler, Physici II 3-192. – Miller, Η γέννησις 232-233.



Fig. 48 Theophilus Protospatharius, De urines, 15th century. Physician examinining urine. Detail. Bologna, Biblioteca Universitaria, ms 363, fol. 51r
.



Fig. 49 Cover page of Nicolaos Myrepsos, Antidotes, 14th century. Physician examinining urine. Detail. Bibliothèque Nationale, Med. MS. Grec. 2243, fol. 10v.

in addition to the somewhat narrow, cylindrical examples (**fig. 48**)[211], conical, beaker-like urinals were also used, which Normans (1185) used in Thessaloniki for drinking, as we are informed by Eustathios of Thessaloniki[212].

Another type of urinal with a flared rim, a short wide neck, an ovular body and convex base, which is very well recorded in Western Europe[213], were also used in Byzantine lands, at least during the Latin occupation, or from this time onwards. The vessel is clearly represented in a very well known scene from a book illumination, which shows the physician examining urine (**fig. 49**). The 14th century copy of the book was created in Athens for a Greek physician, when Attica was under Catalan rule[214]. This depiction is directly connected to some previously unidentified Corinthian finds (**fig. 50**). They were described as jars. They have a wide, flared mouth and, on closer examination of the fragments, it was possible to draw the vessel's profile, which is identical to the one depicted in the hands of Nikolaos Myrepsos[215]. The fact that the urinals are made from an exceptionally thin and clear glass that is free from any impurities and that they were found in the context of a hospital[216] is equally important for their identification.

Glass bleeding cups continued to be used for specialised purposes and thus represented a continuation of earlier knowledge and traditions.

There are also references to square and spherical storage vessels, such as the ones depicted on book illuminations[217]. One of the rarest depictions of glass vessels with medical content can be seen in a good quality, 15th century Constantinopolitan codex of Dioscurides' Materia Medica[218], which depicts low,

211 In a 15th century copy of Theophilus Protospatharius, De urines bound together with Dioscurides, Materia Medica in the library of the university of Bologna (Bibli. Univ. Gr. MS 3632). Theophilus is depicted examining urine: Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 112. – Parani, Representations of Glass Objects 160-161.

212 Eustazio di Tessalonica, La espugnazione di Tessalonica 116, l.5.

213 MacKinney, Medical Illustrations 10-14 figs 6-8; 14-15. – Parani, Representations of Glass Objects 160-161.

214 Cover page of Nicolaos Myrepsos, Antidotes (Bibliothèque Nationale Paris, Med. MS. Grec. 2243) dated to the 14th century: Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 112. – Parani, Representations of Glass Objects 160-161.

215 Personal observation. I would like to thank the Director of Corinth's Excavation of the American School of Classical Studies at Athens, Dr. G. Sanders for letting me examine the material under discussion.

216 Williams II / Zervos, Frankish Corinth: 1994 esp. 37-38 pl. 11 b (c). – Sanders, Corinth 653.

217 Cover page of Nicolaos Myrepsos, Antidotes (Bibliothèque Nationale, Med. MS. Grec. 2243) dated to the 14th century.

218 Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 113 (Vatican City, Bibliotheca Vaticana, Chig. Grec. cod. F, VII, 159).

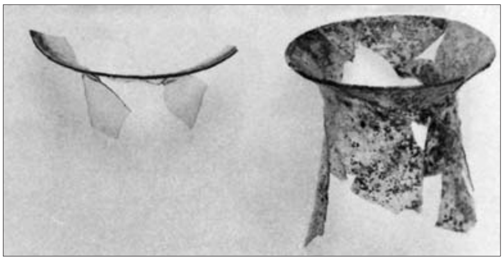


Fig. 50 Urinals from Corinth.

spherical vessels, some of them covered with a vegetal, woven web and others bearing painted decoration, that are placed next to snakes; the vessels contain the antidotes from the snakes.

Similar vessels e.g. ἀγγεῖον, κλοκίον, φιάλη, βικίον[219] were also used by alchemists, while glass alembics were special utensils in continuous use in the preparation of certain substances and medicaments.



Fig. 51 Dioscurides, Materia Medica, 15th century. Biblioteca Apostolica Vaticana, Chig F. VII, 159. 1 – Bottles with antedotes. 2 – Detail.

Religious uses

Ampoullae/unguentaria/myrrh holders

Specific vessels of Islamic, Western and local origin and of certain shapes or sizes were used to hold usually small portions of liquids of a medical or liturgical character[220] (**figs 34-35**). Ring-shaped vessels, quite probably Syrian products, appear to be widespread both around the Aegean and in the Balkans[221] (**figs 36; 52**). Spindle-shaped festooned vessels from Syria and Egypt from the 12th and mainly 13th-14th century[222] were also used. Lentoid vessels, quite probably Venetian imports, with a calyx-shaped rim, were also used as unguentaria (**figs 38-39**)[223], as were lentoid flasks with a short conical neck with a bulge at its base (**fig. 53**)[224]. Finally, it also appears that there was some, possibly limited, local production[225] (**fig. 54**).

219 Present in the 13th century alchemist Nicephoros Blemmydes 452; 453; 455; 456.

220 Pachymeres reports that glass vessels containing papyrus dipped in holy oil were given to soldiers before the campaign against Charles of Anjou: Talbot, Evidence 143 fn. 19.

221 Thessalonike, Istoria kai Techne 59 fig. on p. 57. – Papanikola-Bakirtzi, Everyday life in Byzantium 472; 575; 577 nos 649; 811; 815.

222 Whitcomb, Islamic Glass from al-Quadim 103.

223 Antonaras, Venetian glass Pilgrim Vessels 199-202. – Papanikola-Bakirtzi, Everyday life in Byzantium 578-579 nos 816-818.

224 Papanikola-Bakirtzi, Everyday life in Byzantium 565 no. 783.

225 Flemish traveller J. Van Ghistele who visited Thessaloniki around 1483, mentions that attractive glass vessels were used for taking St. Demetrius' murrth see: Papazotos, Μερικές πληροφορίες 51-56. – Vessels with appropriate size and shape, found in the same basilica, are exhibited in the Museum of Byzantine Culture.



Fig. 52 Ring-shaped unguentarium, 14th century, from Thessaloniki. Byzantine and Christian Museum, Athens.



Fig. 53 Lentoid unguentarium, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.



Fig. 54 Unguentarium, 15th-16th century, from Thessaloniki. Museum of Byzantine Culture, Thessaloniki.

Burial customs

The fact that glass vessels can again be traced to the Paleologan period relates to the burial customs of that time when ancient traditions once again became very popular. Wide and narrow-mouthed vessels were used during burials and memorials, and there was a strong belief that these vessels should not be brought back home after the funeral but that they should be left in the graves. Though we have no evidence of their contents, the vessels must have held oil, which was probably used at the funeral.

According to Symeon of Thessaloniki, oil from the altar's lamp and soil removed with the help of some vessel was poured crosswise over the corpse at a funeral in a symbolic act in order to show that the deceased lived and died in accordance with the sacred canons[226]. Symeon also mentions that a sponge was used to anoint the corpse with oil and water. Such use of oil, i.e. pouring it over the dead, is already known from the early days of the Christian church and was clearly mentioned by Pseudo-Dionysius in the 5th to the early 6th century[227]; it is obviously a custom that survived from ancient religions. The importance of these finds from the cemeteries becomes more evident if we consider the fact that recycling was always systematic, thus depriving us of almost every single glass fragment from inhabited areas.

General remarks

Changes in the economic situation of cities and of society in general led to the mass re-introduction of glass vessels in the everyday life of the Byzantines. Tableware (bottles, beakers, bowls), unguentaria, lamps and other vessels dedicated to special needs, e.g. liturgical, in medicine and alchemy or book copying, are the most common. These needs were met mainly by imports, which flooded the Late Byzantine market, mainly in the form of vessels of Venetian origin, although Islamic glass was also present. Some modest local production can be traced from the extant material, which presents a clear utilitarian character. These fragmentary finds represent our knowledge of glass vessels in the Late Byzantine world. Although, as a result of thorough recycling, constant habitation in the same places and the salvage character of the majority of Byzantine excavations, the overall picture and its true dimensions are still not clear, it is evident that glass vessels were present in abundance in Byzantine regions for the first time since Late Antiquity.

REFERENCES

Sources

Actuarii, De urinis: Joannii Actuarii, De urinis. In: J. L. Ideler (ed.), Physici et medici graeci minores II (Berlin 1842) 3-192.

Aetius Amidenus, Med. Iatricorum liber VII: Aëtius Amidenus, libri medicinales v-viii. In: A. Olivieri (ed.), Corpus medicorum Graecorum 8.2 (Berlin1950) 253-399.

Berthelot / Ruelle, Collection: M. Berthelot / C. É. Ruelle (eds.), Collection des anciens alchimistes grecs I-II (Paris 1888, repr. London 1963).

Damascius, Vita Isidori: Photius Constantinopolitanus, Myriobiblon sive bibliotheca, Ex Isidori philosophi Vita Damascio autore Damascius. Patrologia Graeca t.103, codex CCXLII, cols 1250-1306.

De cerimoniis aulae Byzantinae: Constantini Porphyrogeniti imperatoris de cerimoniis aulae Byzantinae libri duo 1. In: J. J. Reiske (ed.), Corpus scriptorum historiae Byzantinae (Bonn 1829) 386-807.

Edictum Diocletiani: Edictum Diocletiani et Collegarum de pretiis Rerum Venalium in integrum fere restitutum e Latinis Graecisque Fragmentis. Edited by M. Giacchero (Genoa 1974).

Eustazio di Tessalonica, La espugnazione di Tessalonica: Eustazio di Tessalonica. La espugnazione di Tessalonica. Testi e Monumenti. In: S. Kyriakidis (ed.), Istituto Siciliano di Studi Bizantini e Neoellenici 5 (Palermo 1961) 3-158.

Geoponica: Geoponica sive Cassiani Bassi scholastici, De re rustica eclogae. Edited by H. Beckh (Leipzig 1895).

Hippiatrica Berolinensia: Hippiatrica Berolinensia. In: E. Oder / K. Hoppe (eds.), Corpus hippiatricorum Graecorum 1 (Leipzig 1924, repr. Stuttgart 1971) 1-439.

Ideler, Physici: I. L. Ideler (ed.), Physici et medici graeci minores I-II (Berlin 1842, repr. Amsterdam 1963).

Liber Pontificalis: Anonymus, Liber Pontificalis.

[226] Symeon of Thessaloniki, De fine et exitu, cap. 368 P.G. t. 155 col. 669

[227] Pseudo-Dionysius, Celestial Hierarchy cap. 7 P.G. t. 3 col. 565.

http://www.documentacatholicaomnia.eu/01_01_9999-9996-_Pontificorum Vitae.html (11.11.2008).

Manassis, Breviarium historiae: Constantini Manassis breviarium historiae metricum. In: I. Bekker (ed.), Corpus scriptorum historiae Byzantinae (Bonn 1837) 1-286.

Mertens, Les alchimistes grecs: M. Mertens (ed.), Les alchimistes grecs 4.1. Zosime de Panopolis. Memoires authentiques (Paris 1995).

Miklosich / Müller, Acta et Diplomata: F. Miklosich / I. Müller (eds.), Acta et Diplomata, Graeca Medii aevi, Sacra et profana I-VI. Acta et diplomata monasteriorum et ecclesiarum orientis. Sumtus praebente caesarea scientiarum academia Vindobonensi 4 (Vindobonae 1890).

Nicephori Gregorae, Historiae Byzantinae: Nicephorus Gregoras, Historia Romana. In: L. Schopen / I. Bekker (eds.), Nicephori Gregorae historiae Byzantinae. Corpus scriptorum historiae Byzantinae (Bonn I 1829; II 1830; III 1855) I 3-568; II 571-1146; III 3-567.

Nicephoros Blemmydes: Nicephoros Blemmydes, Περί της ὠοχρυσοποιίας. In: M. Berthelot / C. I. Ruelle (eds.), Collection des anciens alchimistes grecs II (Paris 1888, repr. London 1963) 452-459.

Oribasius, Collectiones medicae: Oribasius, collectionum medicarum reliquiae (lib. 1-16, 24-25, 43-50). In: J. Raeder (ed.), Corpus medicorum Graecorum 6.1.1-6.2.2. (Leipzig 6.1.1: 1928; 6.1.2: 1929; 6.2.1: 1931; 6.2.2: 1933).

Paulus Aegineta, Epitomae medicae: Paulus Aegineta, Epitomae medicae libri septem. In: J. L. Heiberg (ed.), Corpus medicorum Graecorum 9.1-9.2. (Leipzig, 9.1: 1921; 9.2: 1924).

Procopius, Hist. De Bellis: Procopius, De bellis. In: J. Haury (ed.) [revised by G. Wirth], Procopii Caesariensis opera omnia 1-2 (Leipzig 1962-1963).

Pseudo-Dionysius, Celestial Hierarchy: Sancti Dionysii Areopagitae, De coeleste hierarchia Patrologiae Cursus Completus. Series Graeca t.3, cols. 119-369. Edited by J.-P. Migne (Paris 1857).

Silentiarius, Descriptio: P. Silentiarius, Descriptio Sanctae Sophiae. In: O. Veh (ed.), Prokop. Werke 5. Die Bauten (München 1977) 306-358.

Soranus, De signis fracturarum: Sorani Gynaeciorum libri IV, De signis fracturarum, De fasciis, Vita Hippocratis secundum Soranum. In: J. Ilberg (ed.), Corpus medicorum Graecorum 4 (Leipzig 1927) 3-152.

Soranus, Gynaeciorum libri: Sorani Gynaeciorum libri IV, De signis fracturarum, De fasciis, Vita Hippocratis secundum Soranum. In: J. Ilberg (ed.), Corpus medicorum Graecorum 4 (Leipzig 1927) 3-152.

Symeon of Thessaloniki, De fine et exitu: Symeon of Thessaloniki, De fine et exitu nostro e vita et de sacro ordine sepulturae et que pro memoria defuntorum solent fieri. In: J. P. Migne (ed.) Patrologiae Cursus Completus. Series Graeca t. 155, cols 669-696 (Paris 1866).

Theophilus, De Diversis Artibus: Theophilus, De Diversis Artibus. Translated by C. R. Dodwell (London 1961).

Theophilus Protospatharius, De urines: Theophilus Protospatharius, De urines. In: J. L. Ideler (ed.), Physici et medici graeci minores I (Berlin, 1842) 261-283.

Thomas / Constantinides-Hero, Byzantine Monastic Foundation Documents. In: J. Thomas / A. Constantinides-Hero (eds.), Byzantine Monastic Foundation Documents. A Complete Translation of the Surviving Founders' Typica and Testaments I-II (Washington DC 2000).

Literature

Acheimastou-Potamianou, Η μονή του Αγίου Νικολάου των Φιλανθρωπηνών: M. Acheimastou-Potamianou, Η μονή του Αγίου Νικολάου των Φιλανθρωπηνών. In: Garides / Paliouras, Μοναστήρια νήσου Ιωαννίνων: Μ. Γαρίδης / Α. Παλιούρας (γεν. εποπτεία), Μοναστήρια νήσου Ιωαννίνων. Ζωγραφική (Ιωάννινα 1993).

Aerts et al., Qumrân: A. Aerts / K. Janssens / B. Velde / F. Adams / H. Wouters, Analysis of the Composition of Glass Objects from Qumrân, Israel, and Comparison with Other Roman Glass from Western Europe. In: M.-D Nenna (ed.), La route du verre. Ateliers primaires et secondaires du second millénaire av. J.C. au Moyen Âge (Lyon 2001) 113-122.

Aldsworth / Haggarty / Jennings / Whitehouse, Tyre: F. Aldsworth / G. Haggarty / S. Jennings / D. Whitehouse, Medieval Glassmaking at Tyre, Lebanon. Journal of Glass Studies 44, 2002, 49-66.

Angelkou, Χωροθέτηση: E. Angelkou, Χωροθέτηση παραγωγικών και εργαστηριακών δραστηριοτήτων στο επισκοπικό συγκρότημα των Λουλουδιών Πιερίας. In: Αρχαιολογικά τεκμήρια βιοτεχνικών εγκαταστάσεων κατά τη βυζαντινή εποχή, 5ος-15ος αιώνας, Ειδικό θέμα 22ου Συμπόσιου Βυζαντινής και Μεταβυζαντινής Αρχαιολογίας και Τέχνης, Αθήνα 17-19 Μαΐου 2002 (Αθήνα 2002) 61-72.

Anrich, Hagios Nikolaos: G. Anrich, Hagios Nikolaos. Der Heilige Nikolaos in der griechischen Kirche. Texte und Untersuchungen 1 (Berlin 1913).

Antonaras, Glass Lamps: A. Antonaras, Glass Lamps of the Roman and Early Christian Periods. Evidence from the Thessaloniki Area. In: 2nd International Study Congress on Antique Lighting [Zalau Cluj-Napoca 13 -18 May 2006] (in press).

Antonaras, Glassware in Late Antique Thessalonikē: A. Antonaras, Glassware in Late Antique Thessalonikē. In: L. Nasrallah / Ch. Bakirtzis / S. Friesen (eds.), From Roman to Early Christian Thessalonikē: A Conference on Religion and Archaeology [Harvard Divinity School, May 10-14, 2007] (in press).

Antonaras, Thessaloniki: A. Antonaras, Ρωμαϊκή και παλαιοχριστιανική υαλουργία. 1ος αι. π.Χ.-6ος αι. μ.Χ. Παραγωγή και προϊόντα. Τα αγγεία από τη Θεσσαλονίκη και την περιοχή της (Αθήνα 2009).

Antonaras, Two Venetian vessels: A. Antonaras, Two Venetian vessels from Thessalonikē. Museum of Byzantine Culture 6, 1999, 37-40.

Antonaras, Venetian Glass Pilgrim Vessels: A. Antonaras, Venetian Glass Pilgrim Vessels found in Thessalonikē. In: 15th International Congress of the International Association for the History of Glass (Corning NY 2002) 199-202.

Apostolides, Ερμηνευτικό λεξικό: P. Apostolides, Ερμηνευτικό λεξικό πασών των λέξεων του Ιπποκράτους (Αθήνα 1997).

Armenopoulos, Πρόχειρον: K. Armenopoulos, Πρόχειρον Νόμων ή ἑξάβιβλος. In: Κ. Γ. Πιτσάκης (ed.), Κ. Αρμενοπούλου, Πρόχειρον Νόμων ή εξάβιβλος (Αθήνα 1971).

Aspra-Dardavake / Emmanouel, Η μονή της Παντάνασσας: M. Aspra-Dardavake / M. Emmanouel, Η μονή της Παντάνασσας στον Μυστρά, Οι τοιχογραφίες του 15ου αι (Αθήνα 2005).

Bakirtzes, Τσουκαλολάγηνα: Ch. Bakirtzes, Βυζαντινά Τσουκαλολάγηνα (Αθήνα 1989).

Barag, Catalogue of Western Asiatic Glass: D. B. Barag, Catalogue of Western Asiatic Glass in the British Museum 1 (London 1985).

Barag, Glass Pilgrim Vessels 1: D. Barag, Glass Pilgrim Vessels from Jerusalem 1. Journal of Glass Studies 12, 1970, 35-63.

Barag, Glass Pilgrim Vessels 2: D. Barag, Glass Pilgrim Vessels from Jerusalem 2. Journal of Glass Studies 13, 1971, 45-63.

Barag, Glass Vessels: D. Barag, Glass Vessels of the Roman and Byzantine Periods in Palestine [unpubl. diss., Hebrew University Jerusalem 1970].

Barag, Recent Important Epigraphic discoveries: D. Barag, Recent Important Epigraphic discoveries Related to the History of Glassmaking in the Roman World. In: Annales du 10eme Congrès International pour l'Histoire du verre [Madrid, Segovia 1985] (Amsterdam, Lochem 1985) 109-116.

Bass, The Nature of the Serçe Limanı Glass: G. F. Bass, The Nature of the Serçe Limanı Glass. Journal of Glass Studies 26, 1984, 64-69.

Bass / Steffy / van Doorninck, Excavation of an 11th-Century Shipwreck: G. F. Bass / J. R. Steffy / F. H. van Doorninck (Jr.), Excavation of an 11th-Century Shipwreck at Serçe Limanı, Turkey. National Geographic Society Research Reports 17, 1984, 161-182.

Bass / Brill / Lledó / Mathews, Serçe Limanı: G. F. Bass / R. H. Brill / B. Lledó / S. D. Mathews, Serçe Limanı volume II: The Glass of an Eleventh-Century Shipwreck (USA 2009).

Bikić, Trgovinski promet: V. Bikić, Trgovinski promet u Beogradu u 15. veku. Starinar n.s. 45-46, 1994-1995, 83-98.

Bitrakova, Rimski grob: V. Bitrakova, Rimski grob od Zajas. Zbornik na Arheološkiot Muzej 4-5, 1961-1966, 95-97.

Braun, Das Christliche Altargerät: J. Braun, Das Christliche Altargerät in seinem Sein und in seiner Entwicklung (München 1932).

Bouras, Lighting devices: L. Bouras, Byzantine Lighting Devices. Jahrbuch der Österreichischen Byzantinistik 32, 1982, 479-491.

Cameniates, Στην άλωση: I. Cameniates, Στην άλωση της Θεσσαλονίκης (904 μ.Χ.). Εισαγωγή-Μετάφραση-Σχόλια Γ. Τσάρας (Θεσσαλονίκη 1987).

Carboni, Glass from the Islamic Lands: S. Carboni, Glass from the Islamic Lands (London 2001).

Carboni / Lacerenza / Whitehouse, Tyre: S. Carboni / G. Lacerenza / D. Whitehouse, Glassmaking in Medieval Tyre: The Written Evidence. Journal of Glass Studies 45, 2003, 139-149.

Charleston, The Import: R. J. Charleston, The Import of Venetian Glass into the Near-East 15th-16th Century. In: Annales du 3e Congrès des «Journées Internationales du Verre» [Damas, 14-23 novembre 1964] (Liege 1964) 158-168.

Chatzidaki, Byzantine Mosaics: N. Chatzidaki, Byzantine Mosaics (Athens 1994).

Constantinides, The Wall Paintings: E. C. Constantinides, The Wall Paintings of the Panagia Olympiotissa at Elasson in northern Thessaly 1 (Athens 1992).

Cunjak, Smederevska Tvrdjava: M. Cunjak, Smederevska tvrdjava, novija istraživanja (Smederevo 1998).

Cutler, Industries: A. Cutler, The Industries of Art. In: A. Laiou (ed.), The Economic History of Byzantium From the Seventh through the Fifteenth Century 2 (Washington DC 2002) 555-589.

Cutler, The Mythological Bowl: A. Cutler, The Mythological Bowl in the Treasury of San Marco at Venice. In: D. K Kouymjian (ed.), Near Eastern Numismatics, Iconography, Epigraphy and History [Studies in Honor of George C. Miles] (Beirut 1974) 235-254.

Dagron, The Urban Economy: G. Dagron, The Urban Economy, Seventh-Twelfth Centuries. In: A. Laiou (ed.), The Economic History of Byzantium From the Seventh through the Fifteenth Century 2 (Washington DC 2002) 393-462.

Davidson, A Medieval Mystery: G. R. Davidson, A Medieval Mystery: Byzantine Glass Production. Journal of Glass Studies 17, 1975, 127-141.

Davidson, Corinth XII: G. R. Davidson, The Minor Objects, Corinth XII (Princeton NJ 1952).

Davis, The Book of Pontiffs: R. Davis, The Book of Pontiffs (Liber Pontificalis): The Ancient Biographies of the First Ninety Roman Bishops to AD 715 (Liverpool, 2000).

Dekowa, Styrmen: M. Dekowa, Wyroby szklane z grodziska w Styrmen (Bulgaria). Slavia Antiqua 22, 1975, 177-277.

Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων: Th. Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων. In: Θ. Διαμαντόπουλος (ed.), Ιατρικά Βυζαντινά Χειρόγραφα (Αθήνα 1995) 71-169.

Dionysiou tou ek Fourna, Ερμηνεία: Διονυσίου του Εκ Φουρνά, Ερμηνεία της ζωγραφικής τέχνης και αι κύριαι αυτής ανέκδοται πηγαί, εκδιδομένη μετά προλόγου νυν το πρώτον πλήρης κατά το πρωτότυπον αυτής κείμενον, υπό Α. Παπαδοπούλου-Κεραμέως, Δαπάναις της Αυτοκρατορικής Ρωσικής Αρχαιολογικής Εταιρείας (Πετρούπολη 1909, Αθήνα: Σπανός, χ.χ.).

Djurić, Vizantijske Freske: V.J. Djurić, Vizantijske freske Jugoslavije (Beograd 1974).

Drandakes / Gioles, Τηγάνι: N. Drandakes / . Gioles, Ανασκαφή στο Τηγάνι Μάνης. Πρακτικά της Αρχαιολογικής Εταιρείας 1980, 247-258.

Dussart, Le verre: O. Dussart, Le verre en Jordanie et en Syrie du sud (Beyrouth, 1998).

Dussart, Quelques indices: O. Dussart, Quelques indices d'ateliers de verriers en Jordanie et en Syrie du Sud de la fin de l'époque hellénistique à l' époque islamique. In: M.-D Nenna (ed.), La route du verre. Ateliers primaires et secondaires du second millénaire av. J.C. au Moyen Âge (Lyon 2001) 91-96.

Foy / Nenna, Tout feu: D. Foy / M.-D. Nenna, Tout feu tout sable. Mille ans de verre antique dans le Midi de la France (Aix-en-Provence 2001).

François / Spieser, Pottery and Glass: V. François / J.-M. Spieser, Pottery and Glass in Byzantium. In: A. Laiou (ed.), The Economic History of Byzantium: From the Seventh through the Fifteenth Century (Washington DC 2002) 594-598.

Freestone / Gorin-Rosen / Hughes, Primary Glass: I. Freestone / Y. Gorin-Rosen / M. J. Hughes, Primary Glass from Israel and the Production of Glass in Late Antiquity and Early Islamic Period. In: M.-D Nenna (ed.), La route du verre. Ateliers primaires et secondaires du second millénaire av. J. C. au Moyen Âge (Lyon 2001) 65-84.

Garides / Paliouras, Μοναστήρια νήσου Ιωαννίνων: M. Garides / A. Paliouras (γεν. εποπτεία), Μοναστήρια νήσου Ιωαννίνων. Ζωγραφική (Ιωάννινα 1993).

Gasparetto, Les verres médiévaux: A. Gasparetto, Les verres médiévaux récemment découverts a Murano (Rapport préliminaire). In:

Annales du 7eme Congrès International pour l'Histoire du Verre [Berlin-Leipzig 15-21, Aout 1977] (Liege1977) 231-254.

Gasparetto, Matrici e aspetti: A. Gasparetto, Matrici e aspetti della vetraria veneziana e veneta medievala. Journal of Glass Studies 21, 1979, 76-97.

Gill, Amorium: M. A. V. Gill, Amorium Reports, finds 1: The Glass (1987-1997). British Archaeological Reports International series 1070 (Oxford 2002).

Gluščević, Historical Glass: S. Gluščević, Previous Research on Historical Glass in the Region. In: I. Lazar / H. Willmott (eds.), The Glass from the Gnalić Wreck (Koper 2006).

Gorin-Rosen, Ancient Glass Industry: Y. Gorin-Rosen, The Ancient Glass Industry in Israel: Summary of the Finds and New Discoveries. In: M.-D Nenna (ed.), La route du verre. Ateliers primaires et secondaires du second millénaire av. J.C. au Moyen Âge (Lyon 2001) 49-64.

Grabar, Early Islamic Art: O. Grabar, Early Islamic Art, 650-1100: Constructing the Study of Islamic Art (Ashgate 2005).

Grabar, La verrerie d'art Byzantine: A. Grabar, La verrerie d'art Byzantine au moyen age. Monuments et Mémoires [Fondation Eugène Piot] 57, 1971, 89-127.

Grabar, Les ampoules: A. Grabar, Les ampoules de Terre Sainte (Paris 1958).

Grose, Early Ancient Glass: D. F. Grose, Early Ancient Glass. Core-formed, Rod-formed, and Cast Vessels and Objects from the Late Bronze Age to the Early Roman Empire, 1600 B.C. to A.D. 50 (New York, Toledo 1989).

Han, Nalazi: V. Han, Nalazi Srednjovekovnog i novijeg stakla u Polimlju. Simpozijum »Seoski dani Sretena Vukosavljevica« 8, 1981, 173-184.

Han, Neke karakteristike: V. Han, Neke karakteristike srednjovekovnog stakla na Balkanu (XII-XV v.). Balcanica 11, 1980, 45-61.

Han, Staklo: V. Han, Srednjovekovno Staklo. In: Istorija primenjene umetnosti kod Srba 1, srednjovekovna Srbija (Beograd 1997) 217-236.

Han, Tri Veka: V. Han, Tri veka dubrovačkog staklarstva XIV-XVI vek. (Beograd 1981).

Han, The Origin and Style: V. Han, The Origin and Style of Medieval Glass found in the Central Balkans. Journal of Glass Studies 17, 1975, 114-126.

Han, Une trouvaille du verre syrien: V. Han, Un trouvaille du verre syrien du XIVe siècle en Serbie. In: V. Han (ed.), Srednjovekovno staklo na Balkanu (Beograd 1974) 92-99.

Han / Brusić, Une découverte: V. Han / Z. Brusić, Une découverte sous-marine du verre médiéval dans l'Adriatique. In: Annales du 7eme Congrès International pour l'Histoire du Verre [Berlin, Leipzig 15-21.8.1977] (Liege1977) 271-281.

Han / Zecchin, Prezence balcaniche: V. Han / L. Zecchin, Prezence balcaniche a Murano e prezence muranesi nei Balcani. Balcanica 6, 1975, 77-97.

Harden, Group G and Group H: D. B. Harden, Group G: Cut and/or Engraved, Group H: Open-Work. In: D. B. Harden / H. Hellenkemper / K. Painter / D. Whitehouse (Hrsg.), Glass of Caesars (Milan 1987) 185-186; 239-249.

Harden, Karanis: D. B. Harden, Roman Glass from Karanis found by the University of Michigan Archaeological Expedition in Egypt, 1924-29. In: University of Michigan Studies, Humanistic Series 41 (Ann Arbor 1936).

Harden, Post-Roman: D. B. Harden, Ancient Glass, 3: Post Roman. Archaeological Journal 128, 1971, 78-87; 89-117.

Hayes, Saraçhane: J. W. Hayes, Excavations at Saraçhane in Istanbul 2. The Pottery (Princeton 1992).

Henderson, Archaeological Investigations at Raqqa: J. Henderson, Archaeological Investigations of an Islamic Industrial Complex at Raqqa, Syria. Damaszener Mitteilungen 11, 1999, 243-265.

Henderson, Glass Trade and Chemical Analysis: J. Henderson, Glass Trade and Chemical Analysis: A Possible Model for Islamic Glass Production. In: D. Foy / M.-D Nenna (eds.), Echanges et commerce du verre dans le monde antique. Actes du colloque de l' Association Française pour l'Archéologie du Verre [Aix-en-Provence, Marseille 2001] (Montagnac, 2003) 109-111.

Henderson, Raqqa New evidence: J. Henderson, Glass Production in Raqqa, Syria: New evidence for an Interim Assessment. In: Annales du 13e Congrès de l'Association Internationale pour l'Histoire du Verre [Pays Bas 1995] (Lochem 1996) 257-268.

Henderson / Mango, Glass at Constantinople: J. Henderson / M. M. Mango, Glass at Medieval Constantinople: Preliminary Scientific Evidence. In: C. Mango / G. Dagron (eds.): Constantinople and its Hinterland: Papers from the Twenty-Seventh Spring Symposium of Byzantine Studies [Oxford, April 1993] (Aldershot 1995) 333-356.

Hesseling / Pernot, Poèmes prodromiques: D. C. Hesseling / H. O. Pernot, Poèmes prodromiques en grec vulgaire 3 (Amsterdam 1910, repr. Wiesbaden 1968)..

Hunger, Ο κόσμος του βυζαντινού βιβλίου: H. Hunger, Ο κόσμος του βυζαντινού βιβλίου. Γραφή και Ανάγνωση στο Βυζάντιο (Αθήνα 1995).

Isings, Roman Glass: C. Isings, Roman Glass from dated finds (Groningen, Djakarta 1957).

Israeli, The invention: Y. Israeli, The invention of blowing. In: M. Newby / K. Painter (eds.), Roman Glass. Two Centuries of Art and Invention (London 1991) 46-55.

Israeli, What did Jerusalem's: Y. Israeli, What did Jerusalem's first-century BCE glass workshop produce? In: Annales du 16e Congrès International pour l' Histoire du Verre [London 2003] (Nottingham 2005) 54-58.

Ivison, Chalices: E. Ivison, Byzantine ceramic chalices: an addendum. Byzantine and Modern Greek Studies 25, 2001, 216-220.

Ivison, Supplied for the Journey to Heaven: E. Ivison, »Supplied for the Journey to Heaven«: A moment of West-East Cultural Exchange – Byzantine Funerary Chalices. Byzantine and Modern Greek Studies 24, 2000, 147-193.

Jacoby, Raw materials: D. Jacoby, Raw materials for the Glass Industries of Venice and the Terraferma, about 1370-about 1460. Journal of Glass Studies 35, 1993, 65-90.

Jennings, Butrint: S. Jennings, A group of glass vessels deposited in AD 800 from a tower in Butrint, Albania. In: Glas in Byzanz. Produktion, Verwendung, Analysen [Workshop Byzantinische Archäologie Mainz, 17th-18th January 2008 in Mainz, Römisch-Germanisches Zentralmuseum] (Mainz 2010, in preparation).

Kadas, Το εικονογραφημένο χειρόγραφο αρ. 2: Σ. Καδάς, Το εικονογραφημένο χειρόγραφο αρ. 2 της Μονής Αγίου Παντελεήμονος (Άγιον Όρος), Συμβολή στη μελέτη των βυζαντινών ευαγγελίων (Θεσσαλονίκη 2001).

Kalavrezou-Maxeiner, Cup of San Marco: I. Kalavrezou-Maxeiner, Cup of San Marco and the »Classical« in Byzantium. In: K. Bierbrauer / P. Klein / W. Sauerländer (eds.), Studien zur mittelalter-

lichen Kunst 800-1250 [Festschrift für Florentine Mütherich zum 70. Geburtstag (1985)] (Munich 1985) 167-174.

Kanonides, Ανασκαφή εργαστηρίου υαλουργίας: I. Kanonides, Ανασκαφή εργαστηρίου υαλουργίας στην Πλατεία Διοικητηρίου της Θεσσαλονίκης. In: Π. Θέμελης (ed.), Το γυαλί από την αρχαιότητα έως σήμερα, Β' Συνέδριο Μαργαριτών Μυλοποτάμου Ρεθύμνης Κρήτης, Μαργαρίτες Μυλοποτάμου, 26-28 Σεπτεμβρίου 1997 (Athens 2002) 143-153.

Keller, Petra: D. Keller, Petra. Ez Zantur III. Ergebnisse der Schweizerisch-Liechtensteinischen Ausgrabungen 1. Die Gläser aus Petra (Mainz 2006).

Koukoules, Βυζαντινών Βίος και Πολιτισμός: Ph. Koukoules, Βυζαντινών Βίος και Πολιτισμός, I-V (Αθήνα 1948-55).

Kriaras, Λεξικό: E. Kriaras, Λεξικό της μεσαιωνικής ελληνικής δημώδους γραμματείας 1100-1669, τ. Ζ' (Θεσσαλονίκη 1980).

Križanac, Srednjovekovno staklo: M. Križanac, Srednjovekovno staklo iz katedrale svetog Tripuna u Kotoru (Beograd 2001).

Lacerenza / Whitehouse, Dannolo: G. Lacerenza / D. Whitehouse, Glass and Glassmaking in Byzantine Italy: The Testimony of Šabbetay Dannolo. Journal of Glass Studies 46, 2004, 109-113.

Laiou, An Overview: A. Laiou, The Byzantine Economy: An Overview. In: A. Laiou (ed.), The Economic History of Byzantium From the Seventh through the Fifteenth Century 3 (Washington DC 2002) 1145-1165.

Laiou, Venice as a Centre: A. Laiou, Venice as a Centre of Trade and of Artistic Production in the Thirteenth Century. In: Belting (ed.), Il medio oriente e l'occidente nell'arte del XIII secolo: Atti del XXIV Congresso Internazionale di Storia dell'Arte [Bologna 1979, sezione 2] (Bologna 1982) 11-26.

Lambrou, Λακεδαιμόνιοι βιβλιογράφοι: S. Lambrou, Λακεδαιμόνιοι βιβλιογράφοι. Νέος Ελληνομνήμων 4.α', 1907, 152-187.

Lambrou, Υπόμνημα: S. Lambrou, Υπόμνημα του Καρδιναλίου Βησσαρίωνος εις Κωνσταντίνον τον Παλαιολόγον. Νέος Ελληνομνήμων 3, 1906, 12-50.

Laskaris, Monuments funéraires: N. G. Laskaris, Monuments funéraires paléochrétiens (et Byzantines) de la Grèce (Athens 2000).

Lazar / Willmott, Gnalić: I. Lazar / H. Willmott, The Glass from the Gnalić Wreck (Koper 2006).

Lester, Glass Bottles and vials from Tiberias: A. Lester, Glass Bottles and vials from Tiberias. In: Annales du 15e Congrès de l'Association Internationale pour l'Histoire du Verre [Corning/NY 2001] (Nottingham 2003) 158-164.

Lymperopoulos, Τζυκάνιο: B. X. Lymperopoulos, Το βυζαντινό τζυκάνιο. Διαχρονία 1, 1997, 6-16.

MacKinney, Medical Illustrations: L. MacKinney, Medical Illustrations in Medieval Manuscripts (London 1965).

Makropoulou, Μονή Βλατάδων: D. Makropoulou, Από το υστεροβυζαντινό νεκροταφείο της μονής Βλατάδων. Η Θεσσαλονίκη 1, 1985, 255-309.

Maltezou, Un artisan verrier crétois: Ch. Maltezou, Un artisan verrier crétois à Venice. In: D. Coulon et al (eds.), Chemins d'outremer: Études d'histoire sur la Méditerranée médiéval offertes à Michel Balard. Byzantina Sorbonensia 20 (Paris 2004) 537-541.

Mandas, Jedna Skrivnica: D. Mandas, Jedna skrivnica u bedemu utvrdjenja manastira Ravanice. In: M. Lazic (ed.), Uzdarije Dragoslavu Srejovicu povodom sezdesetpet godina zivota od prijatelja, saradnika i ucenika (Beograd 1997) 535-539.

Maspero, Papyrus Grecs d' époque Byzantine: J. Maspero, Papyrus Grecs d' époque Byzantine. Catalogue géneral des antiquités égyptiennes du Musée du Caire I-II (Cairo I 1911; II 1913).

Matschke, Late Byzantine Urban Economy: K.-P. Matschke, The Late Byzantine Urban Economy, Thirteenth-Fifteenth Centuries. In: A. Laiou (ed.), The Economic History of Byzantium From the Seventh through the Fifteenth Century 3 (Washington DC 2002) 463-495.

Megaw, A twelfth century scent bottle: A. H. S. Megaw, A twelfth century scent bottle form Cyprus. Journal of Glass Studies 1, 1958, 59-61.

Megaw, More gilt: A. H. S. Megaw, More gilt and enamelled glass from Cyprus, Journal of Glass Studies 10, 1968, 88-104.

Miller, Η γέννησις: T. Miller, Η γέννησις του Νοσοκομείου στην Βυζαντινή Αυτοκρατορία (Athens 1998).

Minić, Boca i kandila: D. Minić, Boca i kandila od stakla iz crkve III u Trgovištu. Novopazarski Zbornik 13, 1989, 59-69.

Minić / Vukadin, Stalać: D. Minić / O. Vukadin, Srednjovekovni Stalać (Beograd 2007).

Mioni, Εισαγωγή στην ελληνική παλαιογραφία: E. Mioni, Εισαγωγή στην ελληνική παλαιογραφία (Αθήνα 1979).

Morey, Gold-Glass Collection of the Vatican Library: C. R. Morey / G. Ferrari (eds.), The Gold-Glass Collection of the Vatican Library, with Additional Catalogues of the Other Gold-Glass Collections. Catalogo del Museo Sacro della Biblioteca Apostolica Vatican 4 (Vatican City 1959).

Nenna / Picon / Vichy, Ateliers en Égypte: M.-D. Nenna / M. Picon / M. Vichy, Ateliers primaires et secondaires en Égypte à l'époque gréco-romaine. In: M.-D Nenna (ed.), La route du verre. Ateliers primaires et secondaires du second millénaire av. J. C. au Moyen Âge (Lyon 2001) 97-112.

Nutton, Galen to Alexander: V. Nutton, Galen to Alexander, Medical Practice in Late Antiquitiy. Dumbarton Oaks Papers 34, 1984, 1-15.

O kosmos tou Vyzantinou Mouseiou: Ο κόσμος του Βυζαντινού Μουσείου (Αθήνα 2004).

Olcay, Lighting methods: B. Y. Olcay, Lighting methods in the Byzantine period and findings of glass lamps in Anatolia. Journal of Glass Studies 43, 2001, 77-87.

Oppenheim / Brill / Barag / Saldern, Glass and Glassmaking in Ancient Mesopotamia: A. L. Oppenheim / R. H. Brill / D. Barag / A. von Saldern, Glass and Glassmaking in Ancient Mesopotamia (Corning NY 1970).

Oxford Dictionary of Byzantium, Tzykanistirion: Tzykanistirion. Oxford Dictionary of Byzantium 3 (1991) 2137.

Painter, Groups J and K: K. Painter, Groups J and K: Introduction, Group K: Gold-Glass. In: D. B. Harden / H. Hellenkemper / K. Painter / D. Whitehouse, Glass of Caesars (Milan 1987) 262-268; 276-286.

Papanikola-Bakirtzi, Everyday life in Byzantium: D. Papanikola-Bakirtzi (ed.), Everyday life in Byzantium, Byzantine Hours. Works and Days in Byzantium [Exhibition catalogue, Thessaloniki White Tower, October 2001-January 2002] (Athens 2002).

Papazotos, Μερικές πληροφορίες: Th. Papazotos, Μερικές πληροφορίες για τη Θεσσαλονίκη από τον J. Van Ghistele (1483). Ιστορικογεωγραφικά 5, 1995, 51-56.

Parani, Representations of Glass Objects: M. Parani, Representations of Glass Objects as a Source on Byzantine Glass: How Useful Are They? Dumbarton Oaks Papers 55, 2005, 147-171.

Pazaras, Ο τάφος των κτητόρων: Th. Pazaras, Ο τάφος των κτητόρων στο Καθολικό της μονής Βατοπεδίου. Βυζαντινά 17, 1994, 407-440.

Pelekanides, Καστοριά: S. Pelekanides, Καστοριά (Θεσσαλονίκη 1940).

Pelekanides / Chatzedakes, Καστοριά: S. Pelekanides / M. Chatzedakes, Καστοριά (Αθήνα 1984).

Petricioli, Gnalić: S. Petricioli, The Gnalić Wreck: The Glass. Journal of Glass Studies 15, 1973, 85-92.

Philippe, Le monde Byzantin: J. Philippe, Le monde Byzantin dans l' histoire de la verrerie (V-XVI siècle) (Bologna 1970).

Pollak, A Fatimid hoard: R. Pollak, Glass Vessels of a Fatimid hoard from Caesarea Maritima. In: Annales du 14e Congrès de l'Association Internationale pour l'Histoire du Verre [Venezia, Milano 1998] (Lochem 2000) 238-242.

Popović / Bikić, Kompleks: M. Popović / V. Bikić, Kompleks srednjovekovne mitropolije u Beogradu, Istraživanja u donjem gradu Beogradske tvrdjave (Beograd 2004).

Prioresci, A History: P. Prioresci, A History of Medicine 4. Byzantine and Islamic Medicine (Omaha 2001).

Protaton, Istoria tou Ellenikou Ethnous: Ιστορία του Ελληνικού Έθνους 1-16 (Athens 1970-1978).

Roffia, Il Tesoro del Duomo di Monza: E. Roffia, Il Tesoro del Duomo di Monza: precisazioni sulla cronologia dei vetri. In: G. Cavalier Manasse / E. Roffia (eds.), SPLENDIDA CIVITAS NOSTRA [Studi Archeologici in onore di Antonio Frova] (Rome 1995) 443-452.

Rogers, Glass in Ottoman Turkey: M. Rogers, Glass in Ottoman Turkey. Istanbuler Mitteilungen 33, 1983, 239-267.

Rosenqvist, Lamps of St. Eugenios: J. O. Rosenqvist, Lamps of St. Eugenios: A Note on Byzantine Glass. Eranos 92, 1994, 52-59.

Ross, A tenth century Byzantine Glass Lamp: M. Ross, A tenth century Byzantine Glass Lamp. Archaeology 10/1, 1957, 59-60.

Saldern, Sardis: A. von Saldern, Ancient and Byzantine Glass from Sardis (Cambridge Mass. 1980).

Saldern, The So-Called Byzantine Glass: A. von Saldern, The So-Called Byzantine Glass in the Treasury of San Marco. In: Annales du 4e Congrès des Journées Internationales du Verre (Liège 1969) 124-132.

Sanders, Corinth: G. D. R. Sanders, Corinth. In: A. Laiou (ed.), The Economic History of Byzantium From the Seventh through the Fifteenth Century 2 (Washington DC 2002) 647-654.

Schilbach, Byzantinische Metrologie: E. Schilbach, Byzantinische Metrologie (Munich 1970).

Sigalas, Βίος και ανατροφή του Αγίου Θεοδώρου: Α. Σιγάλας, Βίος και ανατροφή του Αγίου Θεοδώρου του Τήρωνος. Επετηρίς Εταιρείας Βυζαντινών Σπουδών 2, 1925, 220-226.

Schönauer, Glas und Gläser: S. Schönauer, Glas und Gläser in byzantinischen Texten, in Glas in Byzanz. Produktion, Verwendung, Analysen. [Workshop Byzantinische Archäologie Mainz, 17th-18th January 2008 in Mainz, Römisch-Germanisches Zentralmuseum] (Mainz 2010, in preparation).

Stern, Ancient Agora: E. M. Stern, Byzantine and Medieval glass from the Athenian Agora (9th-14th century). In: Glas in Byzanz. Produktion, Verwendung, Analysen [Workshop Byzantinische Archäologie Mainz, 17th-18th January 2008 in Mainz, Römisch-Germanisches Zentralmuseum] (Mainz 2010, in preparation).

Stern, Kaniskia: E. M. Stern, Kaniskia: Glass and metal openwork lamps. In: Annales du 15e Congrès de l'Association Internationale pour l'Histoire du Verre [New York, Corning 2001] (Nottingham 2003) 98-102.

Stern, Roman, Byzantine and early Medieval Glass: E. M. Stern, Roman, Byzantine and early Medieval Glass 10BCE-700CE. Ernesto Wolf Collection (Ostfildern 2001).

Stern, Roman Glassblowing: E. M. Stern, Roman Glassblowing in a Cultural Context. American Journal of Archaeology 103/3, 1999, 441-484.

Stern, Roman Mold-blown: E. M. Stern, The Toledo Museum of Art. Roman Mold-blown Glass. The First through sixth centuries (Rome, Toledo 1995).

Stern / Schlick-Nolte, Early Glass: E. M. Stern / B. Schlick-Nolte, Early Glass of the Ancient World, 1600 B.C. – A.D. 50. Ernesto Wolf Collection (Ostfildern 1994).

Sternini, La fenice di sabbia: M. Sternini, La fenice di sabbia. Storia e tecnologia del vetro antico (Bari 1995).

Stiaffini, Ευλογία: D. Stiaffini, Ευλογία. Ampolline vitree rinvenute nel Duomo di Pisa. In: D. Ferrari / A. M. Visser Travagli (eds.), Il Vetro nell'Alto Adriatico. Atti delle IX Giornate Nazionali di Studio [Ferrara 13-14 dicembre 2003] (Imola 2007) 79-81.

Tal / Jackson-Tal / Freestone, New Evidence: O. Tal / R. Jackson-Tal / I. Freestone, New Evidence of the Production of Raw Glass at Late Byzantine Apollonia-Arsuf, Israel. Journal of Glass Studies 46, 2004, 51-66.

Talbot, Evidence: A-M Talbot, Evidence about Byzantine Glass in Medieval Greek Texts from the Eighth to the Fifteenth Century. Dumbarton Oaks Paper 55, 2005, 141-145.

Talbot, Women and Religious Life in Byzantium: A.-M. Talbot, Women and Religious Life in Byzantium. Variorum Collected Studies Series (Aldershot 2001).

Thessaloniki, Istoria kai Techne: Θεσσαλονίκη, Ιστορία και Τέχνη [Exhibition catalogue, Thessaloniki White Tower] (Athens 1986).

Trowbridge, Philological Studies: M. L. Trowbridge, Philological Studies in Ancient Glass. University of Illinois Studies in Language and Literature 13/3-4 (Urbana 1930).

Uboldi, Diffusione delle lampade vitree: M. Uboldi, Diffusione delle lampade vitree in etá tardoantica e altomedievale e spunti per una typologia. Archeologia Medievale 22, 1995, 93-145.

Vavylopoulou-Charitonidou, Βυζαντινή κεραμική στην Άρτα: Vavylopoulou-Charitonidou, Βυζαντινή κεραμική στην Άρτα. Δελτίον Χριστιανικής Αρχαιολογικής Εταιρείας περ. Δ' τ. 14, 1984, 453-471.

Vessberg, Roman Glass in Cyprus: O. Vessberg, Roman Glass in Cyprus. Opuscula Archaeologica 7, 1952, 109-165.

Vikan, Art, Medicine and Magic: G. Vikan, Art, Medicine and Magic in Early Byzantium. Dumbarton Oaks Papers 34, 1984, 65-86.

Vukadin, Dve jame: O. Vukadin, Dve jame u crkvi Sv. Spasa u Žiči. In: G. Subotić (ed.), Manastir Žiča. Zbornik radova (Kraljevo 2000) 247-261.

Weinberg, A Medieval Glass Factory: G. D. Weinberg, A Medieval Glass factory at Corinth. American Journal of Archaeology 44, 1940, 297-324.

Weinberg, Corinth XII: G. D. Weinberg. Corinth XII. The Minor Objects (Princeton 1952).

Weinberg / Stern, Athenian Agora: G. Weinberg / E. M. Stern, Athenian Agora XXXIV, Vessel Glass (Princeton 2008).

Wenzel, A Reconsideration: M. Wenzel, A Reconsideration of Bosnian Medieval Glass. Journal of Glass Studies 19, 1977, 63-76.

Wessel, Ampullen: K. Wessel, Ampullen. Reallexikon für Antike und Christentum. Sachwörterbuch zur Auseinandersetzung des Christentums mit der Antiken Welt 1 (1950) 137-142.

Wessel, Eulogia: K. Wessel, Eulogia. Reallexikon für Antike und Christentum. Sachwörterbuch zur Auseinandersetzung des Christentums mit der Antiken Welt 6 (1966) 427-433.

Whitcomb, Islamic Glass from al-Quadim: D. Whitecomb, Islamic Glass from al-Quadim, Egypt. Journal of Glass Studies 25, 1983, 101-108.

Whitehouse, A reassessment: D. Whitehouse, Glassmaking at Corinth: A reassessment. In: D. Foy / G. Sennequier (eds.), Ateliers de Verriers de l'antiquité à la période pré-industrielle. Actes des 4èmes Rencontres de l'Association Française pour l'Archéologie du Verre [Rouen 24.-25. novembre 1989] (Rouen 1991) 73-82.

Whitehouse, Byzantine gilded glass: D. Whitehouse, Byzantine gilded glass. In: R. Ward (ed.), Gilded and Enamelled Glass from the Middle East (London 1998) 4-7.

Whitehouse, Notes on Late Medieval Glass in Italy: D. Whitehouse, Notes on Late Medieval Glass in Italy. In: Annales du 8e Congrès de l'Association Internationale pour l'Histoire du Verre [Londres, Liverpool 1979] (Liege1979) 165-177.

Whitehouse, Roman Glass: D. Whitehouse, Roman Glass in the Corning Museum of Glass 1 (New York, Corning 1997).

Whitehouse, The Date: D. Whitehouse, The Date of the »Agora South Centre« workshop at Corinth. Archeologia Medievale 20, 1993, 659-661.

Whitehouse, Two Medieval Drinking Glasses: D. Whitehouse, Two Medieval Drinking Glasses with Gilded and Enamelled Ornament. In: G. Kordas (ed.), 1st International Conference, Hyalos, Vitrum, Glass, History, Technology and Conservation of Glass and Vitreous Materials in the Hellenic World (Athens 2002) 199-203.

Williams II / Zervos, Frankish Corinth: 1992: C. K. Williams II / O. H. Zervos, Frankish Corinth: 1992. Hesperia 62/1, 1993, 1-52.

Williams II / Zervos, Frankish Corinth: 1993: C. K. Williams II / O. H. Zervos, Frankish Corinth: 1993. Hesperia 63/1, 1994, 1-56.

Williams II / Zervos, Frankish Corinth: 1994: C. K. Williams II / O. H. Zervos, Frankish Corinth: 1994. Hesperia 64/1, 1995, 1-60.

Williams II, Frankish Corinth: C. K. Williams II, Frankish Corinth: An Overview. In: C. K. Williams II / N. Bookdis (eds.), Corinth: The Centenary, 1896-1996. Corinth 20 (Athens 2003) 430-431.

Woods, Some Dubious Stylites: D. Woods, Some Dubious Stylites on Early Byzantine Glassware. Journal of Glass Studies 46, 2004, 39-49.

Zecchin, Denominazioni: L. Zecchin, Denominazioni antiche dei prodotti muranesi. Vetro e cilicati Anno XIII, 74, 1969, 25-28.

Zecchin, Maria Barovier: L. Zecchin, Maria Barovier e le »rosette«. Journal of Glass Studies 10, 1968, 105-109.

Zecchin, Vetro e vetrai: L. Zechin, Vetro e vetrai di Murano. Studi sulla storia del vetro 3 (Venice 1987-1990).

Zekos, Παπίκιο: N. Zekos, Παπίκιο. Μοναστηριακό συγκρότημα Σώστη Ροδόπης. Αρχαιολογικό Δελτίο 40, 1985/B2, 282-287.

ILLUSTRATION REFERENCES

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Fig. 27 http://ina.tamu.edu/images/Serce%20Limani/glass/GW-1327.jpg (11.11.2008).
Fig. 28 http://ina.tamu.edu/images/Serce%20Limani/glass/GW-1393.jpg (11.11.2008).
Fig. 29 According to Calendar of 2004 »The Monastery of Zygou-›Frangokastron‹«, published by Hellenic Ministry of Culture/10 Ephorate of Byzantine Antiquities.
Fig. 30 According to O kosmos tou Vyzantinou Mouseiou 260 pl. 227 β-ε.
Fig. 31 According to Hayes, Saraçhane fig. 153.
Fig. 32 According to Constantinides, The Wall Paintings fig. 75.
Fig. 34 Calendar of 2004 »The Monastery of Zygou-›Frangokastron‹«, published by Hellenic Ministry of Culture/10 Ephorate of Byzantine Antiquities.
Fig. 36 Photo according to Papanikola-Bakirtzi, Everyday life in Byzantium 472 no. 649.
Fig. 37 Djurić, Vizantijske Freske pl. XXXV.
Fig. 38 According to Davidson, Corinth XII figs 11; 12.
Fig. 44 According to Križanac, Srednjovekovno staklo pl. XV/97, XIV/102, XVI/105.
Fig. 45 According to Mandas, Jedna Skrivnica fig. 12. – Davidson, Corinth XII fig. 14.
Fig. 48 According to Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 112.
Fig. 49 According to Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 112.
Fig. 50 According to Williams II / Zervos, Frankish Corinth: 1994 pl. 11 b (c).
Fig. 51 According to Diamantopoulos, Εικονογραφήσεις βυζαντινών ιατρικών χειρογράφων 113.
Fig. 52 According to Papanikola-Bakirtzi, Everyday life in Byzantium 575 no. 811.

ZUSAMMENFASSUNG / ABSTRACT / RÉSUMÉ

Bereits in der römischen Kaiserzeit war die Benutzung von Glas weit verbreitet und auch in byzantinischer Zeit wurde Glas weiterhin verwendet. In den urbanen Zentren des 4. Jahrhunderts wurden Glasgefäße in großer Menge und zu verschiedensten Zwecke, profan und religiös, hergestellt. Zur profanen Nutzung zählen beispielsweise der Transport und die Aufbewahrung von Flüssigkeiten, die Verwendung als Trinkgefäße und zur Präsentation von Speisen, Aufbewahrung von Salben, Kosmetik und medizinischen Substanzen, Beleuchtung von öffentlichen und privaten Gebäuden. Im religiösen Bereich wurden sie zum Transport von geweihtem Wasser oder anderer geweihter Substanzen, bei der Vorbereitung und Erteilung der Heiligen Kommunion oder während Beerdigungen und Gedenkgottesdiensten eingesetzt.
Glasfunde aus der Zeit nach dem 7. Jahrhundert einschließlich der mittelbyzantinischen Periode (9.-12. Jahrhundert) sind selten. Ein Teil des Bedarfs an Rohglass und verzierten Gefäßen dürfte durch Importe aus dem Kalifat gedeckt worden sein. Was die lokale Produktion betrifft, haben sich mit der Ausnahme von zwei Luxusprodukten, vergoldete und geschliffene Gefäße, nur einfache unverzierte Lampen, Unguentaria und Geschirr erhalten. Alle anderen Verwendungen von Glasgefäßen während dieser Epoche werden nur in den Schriftquellen erwähnt.
Während der spätbyzantinischen Periode spielen Glasgefäße wieder eine bedeutende Rolle im alltäglichen Leben der Byzantiner. Dies dürfte auf die veränderten wirtschaftlichen Grundlagen der Städte und der Gesellschaft zurückzuführen sein. Tischgeschirr, Unguentaria, Lampen und andere Formen, die für bestimmte Zwecke genutzt wurden, z.B. im Bereich der Liturgie, der Medizin, der Alchemie oder bei Kopierarbeiten, waren äußerst weit verbreitet. Der Bedarf wurde hauptsächlich durch venezianische und islamische Importe gedeckt, teilweise auch durch lokale zweckmäßige Produkte. Das systematische Recyclen von Altglas, die durchgehende Besiedlung und die Tatsache, dass es sich bei den meisten Ausgrabungen um Rettungsgrabungen handelt, erschweren die Einschätzung der Situation. Dennoch wird deutlich, dass mit der paläologischen Periode zum ersten Mal seit der Antike Glasgefäße wieder in großen Mengen im byzantinischen Bereich auftreten. K.K.

Glass was a material that was already in widespread use during the Roman Imperial period and it continued to be used throughout the Byzantine period. During the 4th century, glass vessels were already widely produced in many urban centres and they were used to meet all kinds of needs, both secular and religious. Secular uses included, for example, transporting and preserving liquids, drinking and presenting food, preserving unguents, cosmetic and medical substances, lighting public and private buildings, whereas religious uses included transporting holy water or other sanctified substances, preparing and distributing Holy Communion, or use during burials and memorials.
For the period after the 7th century and during the Middle Byzantine period (9th-12th century), glass finds are scarce. It seems that part of the demand for raw glass and decorated vessels was met by imports from the Caliphate. As to local production, with the exception of two small groups of luxury products, gilded and cut vessels, only plain, undecorated lamps, unguentaria and tableware have been preserved, while all other previous known uses of glass are only mentioned in written sources of this period.
During the Late Byzantine period, and most probably due to the changes in the economic situation of cities and society in general, glass vessels were widely re-introduced into the everyday life of the Byzantines. Tableware, unguentaria, lamps and other vessels dedicated to special needs, e.g. liturgical, in medicine and alchemy or book copying, are the most common. These needs were met mainly by Venetian and Islamic imports and partly by local products of a utilitarian character. Although the overall picture and its true dimensions are still not clear, due to systematic recycling, constant habitation in the same places and the salvage character of the majority of Byzantine excavations, it is clear that, for the first time since Late Antiquity, glass vessels were present in abundance in Byzantine regions during the Paleologan period.

Au cours de l'époque impériale romaine, l'usage de verre est largement répandu et son utilisation se poursuivra aux époques byzantines. Dans les centres urbanisés du IVe siècle, de grandes quantités d'objets en verre furent réalisées, servant à différentes utilisations, profanes et religieuses. Parmi leurs emplois matériels comptent par exemple le transport et la conservation de liquides, la fonction de récipients à boire et la présentation de mets, d'onguents, de produits cosmétiques et de substances médicinales, ou d'éclairage de bâtiments publics ou privés. Dans le domaine religieux, ils ont servi à l'acheminement d'eau bénite ou d'autres substances sacrées employées dans la préparation et la célébration de la sainte communion ou pendant les inhumations et les messes commémoratives.
Des découvertes de verre dans les époques postérieures au VIIe siècle, incluant la période byzantine moyenne (IXe au XIIe siècle) sont rares. Une partie des besoins en verre brut et des récipients décorés ont du être couverts par l'importation en provenance du Califat. Au sujet de la production de récipients locaux, n'ont été uniquement conservés, à

l'exception de productions de luxe, dorées et égrisées, de simples lampes non décorées, des flacons à parfum et de la vaisselle. Toutes les autres utilisations de ces objets en verre au cours de cette époque sont exclusivement mentionnées dans les sources écrites.
Pendant la période byzantine tardive, les contenants en verre rejouent un rôle significatif dans la vie quotidienne des byzantins. Cela est du aux modifications des bases économiques des villes et de leurs sociétés. Vaisselle de table, flacons d'onguents, lampes et autres modèles servant à des usages spécifiques, par exemple dans l'aire ligurienne, pour la médecine, l'alchimie ou à des travaux de copistes, étaient amplement répandus. Les besoins sont surtout couverts par les importations vénitiennes et islamiques, partiellement également par des productions locales opportunes. Le recyclage systématique du verre usagé, la colonisation continue et le fait qu'ils s'agissent de découvertes archéologiques en fouilles de sauvetage, compliquent l'évaluation de la situation. Malgré cela, il semble aujourd'hui qu'avec la période Paléologue et pour la première fois depuis les récipients en verre de l'Antiquité, surviennent à nouveau en très grande quantité dans l'aire byzantine. E. L.

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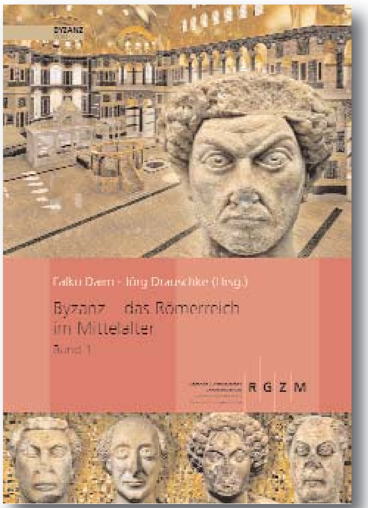
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BYZANZ 2010

Unter diesem Banner erscheint im Jahr 2010 eine Reihe von Publikationen des Verlages des Römisch-Germanischen Zentralmuseums, die sich mit der Archäologie und Geschichte des Byzantinischen Reiches beschäftigen. Anlass ist die Ausstellung »Byzanz – Pracht und Alltag«, die vom 26. Februar bis zum 13. Juni 2010 in Bonn gezeigt wurde. Veranstaltet von der Kunst- und Ausstellungshalle der Bundesrepublik Deutschland wurde sie vom RGZM in Zusammenarbeit mit zahlreichen Fachkollegen konzipiert. Das RGZM setzt damit seine Forschungen im Bereich der Spätantike im Mittelmeerraum und des Byzantinischen Reiches fort, die bereits auf eine lange Tradition zurückblicken können und die in den letzten Jahren – nicht zuletzt durch einige Projekte, die zusammen mit Kooperationspartnern an Plätzen im Gebiet des Byzantinischen Reiches selbst durchgeführt werden – zu einem Schwerpunkt der Tätigkeiten des RGZM geworden sind.



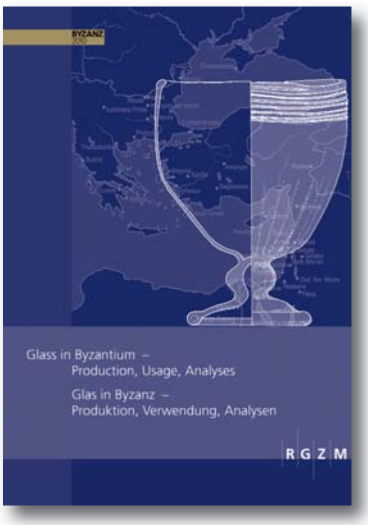
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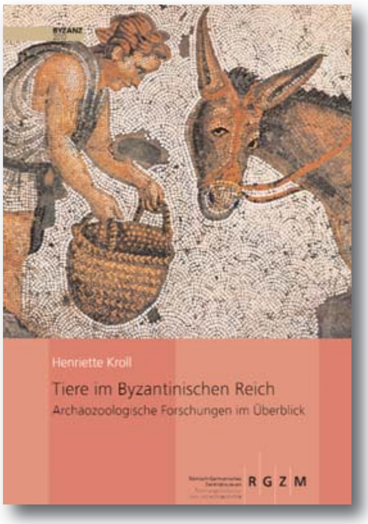
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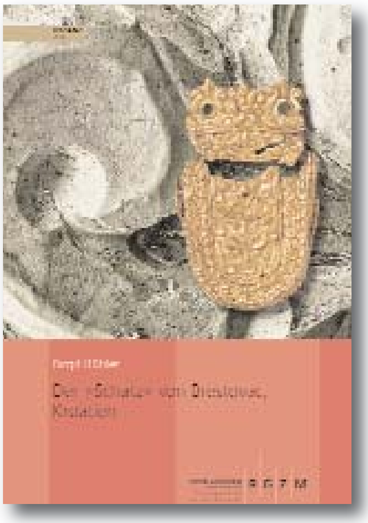
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